PERSONAL AND ENVIRONMENTAL BARRIERS AND FACILITATORS TO SOCIAL PARTICIPATION AMONG CANADIAN ADULTS WITH MOBILITY DISABILITIES

by

© Stephanie Beveridge

A thesis submitted to the

School of Graduate Studies

in partial fulfillment of the requirements for the degree of

Masters of Kinesiology

School of Human Kinetics and Recreation

Memorial University of Newfoundland

May 2014

St. John's Newfoundland

ABSTRACT

The prevalence of mobility disabilities is increasing in part due to the ageing population. People with mobility disabilities are at an increased risk of reduced social participation and activity limitations and thus reduced well-being. Social participation is important to one's health and quality of life. The purpose of this secondary data analysis study was to explore factors (personal and environmental) that were most influential to social participation levels among adults aged 20-64 (N = 6105). Statistics Canada's 2006 Participation and Activity Limitation Survey was used. Data analysis included descriptives of sociodemographics, personal and environmental barriers and facilitators and logistic multinominal univariate and multivariate regression. There was no clear trend as to whether personal or environmental factors were the strongest predictors to social participation. The results of this study suggest a complex interaction between personal and environmental factors that constrain and promote social participation; it provides the foundation for further empirical research to increase activity participation and mobility.

Key words: recreation, leisure, activities of daily living, well-being, quality of life, constraint, International Classification of Functioning (ICF), Participation and Activity Limitation Survey (PALS).

ACKNOWLEDGEMENTS

First off I would like to express my deep gratitude to my supervisor, Dr. Angela Loucks-Atkinson, for taking me on as a student and guiding me with patience, expertise, and love throughout all the ups and downs of my journey to completing my master's degree. Your encouragement and direction truly made a difference in my work and progress. Thank you for giving me space and staying on top of me when I needed a push. Thank you for all the life advice and support - you are more than just a supervisor you are a great friend!

To my family, thank you for supporting me through my travels and continuing education as I progress in finding my passion. Nana, thanks for always calling and sending care packages, as it always brought me a bit of home. Grampie, Nana, Daddy, Lindsay, and Adam I always miss you while I'm away and am ever grateful for all of your support and understanding.

To Miss Laura Chubb for being such a great friend throughout our adventures in St. John's. Thank you for visiting every coffee shop in the city with me to write, chat, and relax. For all the late nights, early mornings, Wednesday night dinners, tears, and of course laughter.

To all of my friends outside of St. John's for the long distance phone calls and skype dates it was much appreciated, as I know I did not come home often. Brittney Sheldrick for visiting me in everyplace thus far!

To all of the lovely people who made my life in St. John's so pleasant over the last three years: Matt Miller, Andrew Baker, Meaghan Maddigan, Julia Dowden, Alan Dalton,

Lauren O’Connor, Meg Dupuis, Graham MacDonald, Emily McBurney, Danielle Sands, Allison Mahoney, and Dominic Collins.

I’d like to acknowledge Dr. Jeannette Burn and Dr. Erin McGowen for their participation in my committee and for all of their help making my thesis top notch!

This has truly been a bittersweet experience and every moment has led me to learn more about myself and I am full of joy to start a new chapter of my life.

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CHAPTER 1: INTRODUCTION

1.1 Background

Mobility disabilities are becoming increasingly more common for adults in Canada. Between 2001 and 2006 the Canadian population of persons with disabilities increased by 21.2%; approximately 1 of 7 Canadians (Statistics Canada, 2006b). The three most reported disabilities causing activity limitations among adults aged 15 and over in Canada are pain (11.7%), agility (11.1%) and mobility (11.5%) (Human Resources and Skill Development Canada (HRSDC), 2006). Mobility disability can be defined as impairments a person has to their body structure or physiological functioning; it could be limitations someone faces with activities ranging from slight to severe, or it could be problems one may experience when trying to participate in life situations from a societal or cultural perspective (World Health Organization (WHO), 2001). Mobility disability is a chronic health condition that can have a major impact on the physical functioning of an individual as she/he ages through the life course. Prevalence of mobility disabilities increases with age. The prevalence of disability and impairment is highest among those 65 years of age and older with 76.4% reporting a mobility limitation compared to less than 2% between the ages of 15-24 (Statistics Canada, 2006b). Research among individuals with mobility disability specifically is limited, but there is a vast amount of research on older adults with physical disabilities in relation to well-being. Specific research with mobility disabilities and life satisfaction has also primarily been conducted among older adults despite the fact that mobility disability affects individuals over the entire life course.

Limitations negatively impacting quality of life (QOL; e.g., difficulties with everyday activities) are more likely among individuals with a chronic physical health problem (WHO, 2001). Mobility disabilities can be a burden if one does not cope effectively and therefore impact an individual's satisfaction with life and overall well-being. Research suggests that the degree of mobility and pain levels can significantly impact an individual's QOL and well-being (Bakula et al., 2011; Cho et al., 2013; Falsarella et al., 2012; Kikuchi et al., 2011; Ozdemir et al., 2011). It has been found that mobility and life satisfaction are significantly positively related (Mollaoglu, Tuncay, & Fertelli, 2010). An increase in depression has also been linked with mobility disabilities (Meltzer et al., 2012).

Mobility disabilities can reduce and restrict many domains of one's life (e.g., self-care and disability management, household and family duties, leisure and social participation). Reseachers Poulin and Desrosiers (2009) indicated that there is an important association with the level of satisfaction one has with their social participation and their overall well-being. Social participation can be defined as one's involvement in life situations, which can include being part of social, religious and political situations, being part of clubs or groups, volunteering, or participating in recreation or sport (WHO, 2001). Social participation is an important element to one's well-being; it can create social networks which give a sense of belonging and can create balance in one's life (WHO, 2001). Participating socially can have benefits such as providing information, access, services, and emotional support (HRSDC, 2011) and can also strengthen one's control of decisions that directly influence one's health and QOL (WHO, 2001). Participation as a citizen, that is engaging in social, political, and governmental life, has

been rarely seen as an important domain when studying social participation of persons with disabilities (Puumalainen, 2011). It is important to maintain social and leisure activities as reduced or limited participation in these activities can be detrimental to an individual's health as one ages through the life course (Abraham et al., 2012; Hoglund, Sadovsky, & Classie, 2009; Holmes & Joseph, 2011; Janke et al., 2012; and Lee et al., 2008). Social contact can be highly influential on the level of deterioration of functioning among adults with physical disabilities (Patrick, 1986). Despite the importance of social participation, many people with disabilities, including mobility disabilities, have reduced or limited opportunities for social participation due to a variety of personal and environmental barriers.

Disabilities, including mobility disabilities, were initially viewed as a problem of the individual caused directly by the disease or trauma (WHO, 2001). This view focused on what individuals could do in order for them to manage their condition. Progressively the view changed to comprehend that mobility disabilities are complex and there are many factors that can have an effect on an individual with disabilities. Research on mobility disabilities has shifted focus to look at the antecedents and consequences of chronic health not only at the individual level, but also at the societal level; examining the interactions with environmental and personal factors.

The WHO (2001) has put forth a model named the ICF that represents a cycle where bodily functions, activities, and social participation are all connected. This framework defines disability as the relationship between body structures and functions, daily activities and social participation, while recognizing the role of environmental factors. Thus this framework recognizes the importance of participation in valued life

activities as central to the health of the individual. In using the ICF model conceptually, it states that mobility disability and social participation are complexly interrelated. Looking at how these factors are related can be valuable in determining barriers and facilitators to social participation.

Large scale national research on persons with disabilities is collected every five years in Canada through the Participation and Activity Limitation Survey (PALS; Statistics Canada, 2006b). This survey is cross-sectional and collects data from a random sample of the population. PALS provides essential information on the prevalence of various disabilities; existing supports for persons with disabilities; and the employment profile, income and participation in society of Canadians with disabilities. The collection of this data allows for greater Canadian research in the area of disability and development of new social policies. Previous research has been conducted using the 2001 and 2006 PALS. Due to the large scale nature of the survey many topics have been researched including participation and activity limitations (Goodridge, Lawson, Marcinuik, & Rennie, 2011), volunteering (Campolieti, Gomez, & Gunderson, 2009), leisure/recreation activities (Paez & Farber, 2012), intellectual and psychological disabilities (Bielska, Ouellette-Kuntz, & Hunter, 2012; Shooshtari, Naghipur, & Zhang, 2012), children with and without developmental and intellectual disabilities (Baillargeon & Bernier, 2010; Masse, Miller, Shen, Shiariti, & Roxborough, 2012), caregivers of children with intellectual disabilities (Baillargeon & Bernier, 2010), discrimination of individuals with disabilities (Kassam, Williams, Patten, 2012), employment status (Farber & Paez, 2010), and obesity (Brien, Katzmarzyk, Craig, & Gauvin, 2007).

The majority of the studies using PALS have focused on different everyday

limitations that relate to participation or health. None of the studies have specifically focused on mobility disabilities and the barriers and facilitators to social participation. Research is needed to determine specific factors that promote mobility and aid in the maintenance or increase of social participation among adults with mobility disabilities. There is a vast amount of research that looks at constraints to social participation and some research that explores physical disabilities related to social participation; however, most studies are with small sample sizes and with specific disability conditions (e.g., rheumatoid arthritis and multiple sclerosis) rather than on mobility disabilities in general. As well research on social participation varies, as there is no set model or framework that is universally applied. Since it is shown that mobility is more frequent among older adults, the majority of research in this area has examined older adults. Research in mobility disabilities among young and middle aged individuals could help in prioritizing strategies for decreasing limitations as a result of mobility disability and thus maintain or improve well-being and QOL as this cohort ages.

1.2 Purpose and Significance of the Study

The purpose of this study is to explore what environmental and personal factors are most influential in affecting social participation among adults (20 to 64 years of age) with mobility disabilities in Canada. The research questions to be explored are: (1) What barriers are associated with reduced social participation among adults with mobility disabilities? (1b) Are the major barriers to social participation personal or environmental? (2) What are the facilitators that are associated with increased social

participation among adults with mobility disabilities? (2b) Are the major facilitators to social participation personal or environmental?

This current study is a secondary data analysis of a cross-sectional study. This study used data from the 2006 PALS and addressed the gaps in literature by using a large national sample, looking at the age group of young and middle aged adults (ages 20-64), focusing solely on the area mobility disabilities and exploring the barriers and facilitators that affect social participation among this group. In addition this study explored the contextual factors, personal and environmental, to explore which factors contribute more to having reduced social participation with this specific population. This investigation may provide knowledge of the most influential barriers affecting persons with mobility disabilities from participating socially and thus provide direction for methods of prevention (i.e. preventing reduced social participation). Results of this study may have implications for changing social policies and services to improve the well-being of individuals with mobility disabilities. Researching a younger age group of adults may help in prioritizing preventive actions in decreasing limitations towards social participation, thus improving QOL and well-being and therefore affecting the future of these adults as they age.

CHAPTER 2: LITERATURE REVIEW

The Canadian population of persons with disabilities increased between 2001-2006 by 21.2%, with approximately 1 in 7 persons having a disability (Statistics Canada, 2006). The three most reported disabilities causing activity limitations in Canada among adults aged 15 and over are pain (11.7%), agility (11.1%) and mobility (11.5%) (HRSDC, 2006). Mobility disability can be defined as impairments a person has to their body structure or physiological functioning; it could be limitations one faces with activities ranging from slight to severe, or it could be problems one may experience when trying to participate in life situations from a societal or cultural perspective (WHO, 2001). Rates of disabilities in Canada increase with age ranging from 3.7% for children under 14 years of age and 4.7% for adolescents and young adults 15 to 24 years of age. Respectively this increases to 33.0% for adults 65 to 74 years of age and 56.3% for those 75 years and over (HRSDC, 2006). This trend is also true for mobility disabilities with fewer than 2% of adolescents and young adults with a mobility-related disability compared with 31.5% for persons aged 65 years and over (Statistics Canada, 2001). A consequence of this trend is that the majority of research on mobility disabilities involves older adults (i.e., 65 years of age or older) despite the fact that mobility disability effects individuals of all ages: 4.9% of young adults, 7% of young and middle aged adults (25 to 54 years of age), and 16.7% of adults aged 55 to 64 in Canada have a mobility-related disability (HRSDC, 2011). These rates are significant and thus warrant research attention. "Active Ageing" (WHO, 2002) is a process of optimizing an individual's opportunities for security, health and social participation to enhance and extend QOL as one ages. Thus, active and healthy

aging does not begin, as one becomes an older adult, but rather occurs across the life course. Research in mobility disabilities among young and middle aged individuals would help in prioritizing strategies for decreasing limitations as a result of mobility disability and thus maintain or improve well-being and QOL as this cohort ages.

One of the negative consequences of having a chronic physical health problem is the increased likelihood of experiencing difficulty in executing everyday activities, known as activity limitation (WHO, 2001). Mobility disability can result in restriction of participation in various life domains including self-care and disability management, household activities, family life, work, and participation in social and leisure activities. Social participation can be defined as one's involvement in life situations, which can include being part of social, religious and political situations, being part of clubs or groups, volunteering, or participation in recreation or sport (WHO, 2001). It is an important element of one's overall well-being; socializing with others can create a connection to the community, to friends and others (HRSDC, 2012).

Engaging in social, political, and governmental life, has rarely been seen as an important domain when studying social participation of disabled persons (Puumalainen, 2011). Research on social participation among individuals with mobility disability is limited. The majority of research has been conducted on physical disabilities in general or on specific types of mobility disabilities (e.g., multiple sclerosis and rheumatoid arthritis). Many of these studies consist of small sample sizes and thus population studies are lacking. Focusing on the general population of individuals with mobility disability to identify barriers to social participation would aid government, health care and community services to develop policies, resources and services to improve the social participation of

this population, and thus their health, well-being and QOL.

The WHO (2001) has put forth a model by the ICF that represents a cycle where bodily functions, activities, and social participation are all connected. This framework defines disability as the relationship between body structures and functions, daily activities and social participation, while recognizing the role of environmental factors (e.g., extrinsic factors such as physical accessibility, transportation). Thus this framework recognizes the importance of social participation in valued life activities as central to the health and well-being of the individual. Due to lack of research among young and middle-aged adults with mobility disabilities in general and with a focus on social participation in particular there is a need for more information regarding the major barriers and facilitators to participation among this population. The purpose of this study is to explore the environmental and personal factors are most influential in affecting social participation among adults (20 to 64 years of age) with mobility disabilities in Canada.

2.1 Importance of Social Participation

Social participation is a person's involvement in life situations; it is a societal perspective of functioning (WHO, 2001). Examples of social participation are: participating in social, recreation, religious, or political activities; being part of a club; volunteering within the community, schools, recreation, sport, and professional associations. Hammel et al. (2008) conducted a qualitative study investigating the meaning of social participation among 63 people with an array of disabilities (type of disability and age werenot specified). The researchers explored what participation means,

how it is characterized, and what barriers and supports there are to participation. Participants with activity limitations conceptualized social participation as a cluster of values that included: active and meaningful engagement; choice and control; access and opportunity; personal and societal responsibilities; supporting others; and social connection, inclusion and membership. Furthermore a review of literature was performed by Levasseur, Desrosiers, & Whiteneck (2010) on the definition of social participation relating to older adults. The overall analysis determined that social participation could be defined as a person's involvement in activities that provide interaction with others in society or the community. The majority of the definitions maintained that to participate socially the individual must specifically be involved with others.

Social participation is an important element to one's well-being and QOL; it can create social networks, which give a sense of belonging and can create balance in one's life (Statistics Canada, 2003; WHO, 2001). Engagement in social and leisure activities can have benefits such as providing information, access, services, emotional support, and new relationships (HRSDC, 2012). Participation in social and leisure activities can also strengthen one's control of decisions that directly influence one's health and QOL (WHO, 2012). Social participation in general can provide active and meaningful engagement and allow someone a sense of belonging. For example, a research participant in Hammel's (2008) study stated that the importance of social participation is: "Just to be able to do whatever you want to do to your fullest extent to the best of your ability. Just to be able to have a voice and a place in society" (p. 1450). Thus, social participation can be an important element to one's well-being as socializing with others creates connection to community, friends, and others, and provides balance in one's life.

Despite the importance of social participation, many people with disabilities including mobility disabilities have reduced or limited opportunities for social participation due to a variety of personal and environmental barriers. Hammel et al.'s (2008) participants discussed how having a disability impacts their ability to participate fully and that everyone should have the opportunity and option to engage in social participation. A larger issue facing those with disabilities is the ability to be able to self-advocate and have a voice in society as a person with a disability. As stated by another of Hammel's participants: "I think there is a lack, where we are all working together to try to let people know what our needs are" (Hammel, 2008, p. 1451). Indeed a lack of accessibility and available opportunities for social participation constrains individuals from fully participating (Arbour-Nicitopoulos, 2011; Hammel, 2008; Rimmer, 2005; Sa, 2012; Williams,2004). Individuals with disabilities want to be treated with equality, but at the same time need access to other resources that can aid them in being able to participate fully.

2.2 Models and Theories

There is no standard model for disablement. Various models and theories have been developed and applied to the study of the prevention and management of disability including the medical model (WHO, 2001), social model (WHO, 2001), biopsychosocial model (Jette, 2006), and the disablement model (Nagi, 1965; Snyder, 2008). The *medical model* identifies disability as a problem of the person, directly caused by disease, trauma, or health conditions that require medical care (WHO, 2001). The management aim of this model is based on cure or an individual's adjustment and behaviour change. This is

subject to rehabilitation or long-term care by health professionals. The *social model* views disability as a socially created problem related to the matter of full integration of individuals into society (WHO, 2001). In this model, disability is identified not as an attribute of a person, but as a complex collection of conditions created by the social environment. The management aim in this model is through social action and focus on environmental modifications that allow for full participation of people with disabilities in all areas of social life (WHO, 2001). The *biopsychosocial model* is a union of the two previous models. It identifies disability as an effect of biology, society, and personal factors (Jette, 2006). The combination of all these factors is what causes the disablement. The biopsychosocial model represents the perspective that is most widely used with disablement frameworks.

In 1965, sociologist Saad Nagi developed the Nagi's Disablement Model (Nagi, 1965). Through research in disability literature he soon realized that researchers should study not only the physical aspect of an individual but that it should be described at a personal and societal level. To fully understand an individual's disablement, the capacities of a certain individual and the capacities this individual has in relation to their environment must be fully understood (Snyder, 2008). Nagi's model (Figure 1) consists of four components: (1) *Active Pathology,* cellular/body structures; (2) *Impairments,* loss or abnormality of body systems; (3) *Functional Limitations,* restriction in performance of activities of daily living/social roles; and (4) *Disability,* inability to fulfill desired or necessary social/personal roles (Jette, 2006; Snyder, 2008).

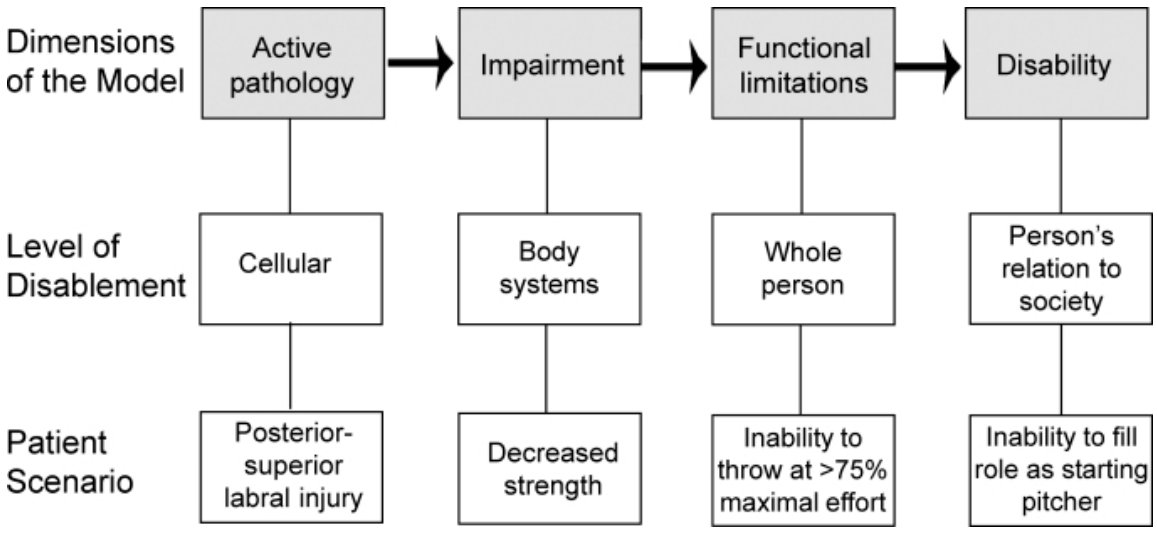

Figure 1: Nagi's Disablement Model

In 1993 a similar framework evolved from Nagi's Disablement Model from the National Institutes of Health: the National Center for Medical Rehabilitation Research Disablement Model (Snyder, 2008). This model extended Nagi's Disablement Model by adding a fifth dimension, which represents social influences. These two models are what helped lay the foundation for the WHO to put forth the most recent framework of disablement: International Class of Functioning Conceptual Framework (ICF).

2.2.1 International Class of Functioning Conceptual Framework

The ICF provides the conceptual framework for this study and is the WHO (2001) framework of disability. It is widely used in social policy, international and national disability reporting, and clinical and epidemiological research. The aim of the ICF is to provide a unified, standard language and a framework for the description of health and health related states (WHO, 2001). The ICF model was first developed for a trial in 1980 with the latest revision completed in 2001. The newer version differs in the depiction of

the interrelations between functioning and disability. The goal of the revised model was to aid in creating a common language between different types of users: healthcare workers, policy makers, researchers, and the public. It also aimed to enable comparison of data and provide a scientific basis for the understanding and study of disability and health and their related states, outcomes and determinants. The ICF model has been accepted as the *United Nations* social classifications and is referred to in and incorporates *The Standard Rules on the Equalization of Opportunities for Persons with Disabilities* (WHO, 2001). The ICF can be applicable for uses with social security, the evaluation of managed health care, health care systems and population surveys at all levels. Furthermore, the ICF model provides a conceptual framework that is highly suited to personal health care, prevention, promotion, and improvement of social participation research.

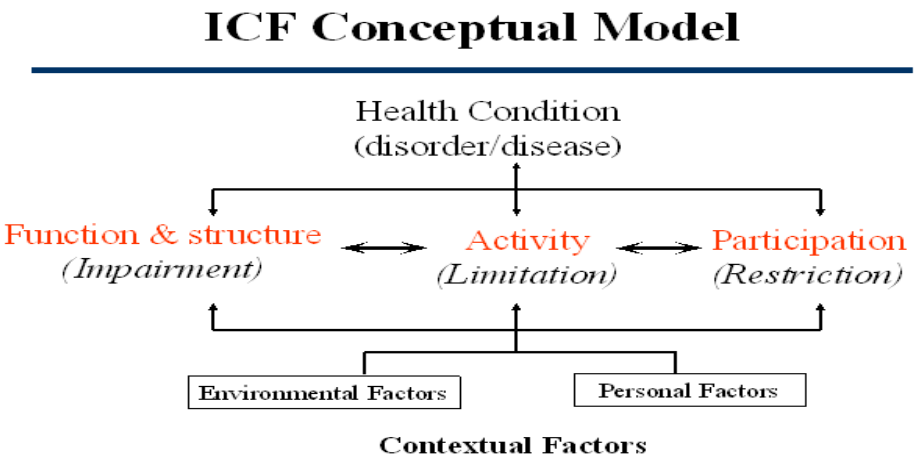

Figure 2: The International Classification of Functioning (ICF) Conceptual Model

The ICF framework defines disability as the relationship between body structures and functions, daily activities and social participation, while recognizing the role of

environmental and personal factors (see Figure 2). The ICF has moved away from classifying disabilities as "consequences of diseases" (1980 version) to an approach that is focused on the "components of health" classification. "Components of health" identify the constituents of health, whereas "consequences" focus on the impacts of diseases or other heath conditions that may follow as a result (WHO, 2001). The ICF organizes information through describing situations with concern to human functioning and its restrictions. The ICF classification system is composed of two domains: (1) Functioning and Disability and (2) Contextual factors. Each domain is further divided into two components or parts. *Functioning and Disability*, a body component, contains the following: (a) Body Functions and Structures and (b) Activities and Participation (i.e., individual and societal). *Contextual Factors* contain the following: (a) Environmental Factors and (b) Personal Factors. Each of the components can be expressed in both positive and negative terms and are further classified into various domains. The one exception to this is the personal factors, which are not classified in the ICF due to the large scale of social and cultural variance.

Contextual factors (environmental and personal) interact with an individual with a health condition and determine the level and extent of the individual's functioning. The environmental factors are extrinsic to the individual and make up the physical, social, and attitudinal environment in which people live and conduct their lives. They include items such as attitudes of society, architectural characteristics, legal systems, family support, and material circumstances. Personal factors are the background of an individual's life and living, and comprise features of the individual that are not part of a health condition

or state. Personal factors that may have an effect on an individual's disability are gender, race, fitness, lifestyle, habits, coping styles, education, and employment/profession.

Enduring any one of the three components of disability (i.e., function impairments, activity limitation and participation restrictions) classifies one as having a mobility disability (WHO, 2001). Impairments occur when one experiences a loss or an abnormality in any body structure or physiological function. Activity is the ability to execute a task or action, whereas activity limitation is when an individual has difficulties in execution, with a range from slight to severe deviation in terms of quality and quantity. Participation is a persons' involvement in life situations, with a societal perspective of functioning. However, participation restriction occurs when individuals experience problems in involvement in life situations determined by expectations set by society and culture. An example of an individual with a mobility disability would be someone who has little of no use of his or her lower limbs and uses a wheelchair due to an injury or disease -- this is his or her impairment. If the individual were unable to perform certain activities of daily living (ADLs) without assistance (e.g., reaching, transferring/standing, driving, bathing, exercising, dressing, washing dishes) they would experience an activity limitation. Therefore, this person would be susceptible to participation restrictions such as the inability to take care of themselves and or family members, the lack or inability to use certain transportation, or the inability to join friends in certain exercise classes. Environmental factors that would be as barriers in this situation could include: architectural designs of buildings and public transportations, family support systems, and attitudes of society. Personal factors that may affect this individual could be his or her age and lifestyle habits he or she acquired from their current limitations and restrictions.

The ICF has been applied to previous research in the form of validation of functioning and contextual factors. Validation of these factors has been applied among breast cancer patients (Glaessel et al., 2011) and individuals with osteoarthritis (Cieza, Hilfikerb, Chatterjic, Kostanjsekd, Üstünd, & Stuck, 2009), as well validating activity and participation domains among older adults (Rejeski, Ip, Marsh, Miller, & Farmer, 2008). Further, the ICF model has been used for the exploration of relationships and concepts used within the activity and participation components (Della Mea & Simoncello, 2012), as well as the classification of diverse and specific problems with outdoor mobility services and devices (Wessels et al, 2004). This ICF model has been most often used and tested conceptually in research. Empirical testing of the model, through research that attempts to validate model factors or components, is lacking. This lack of research may be due to the complexity of the model and thus complexity in its empirical validation. In general, it may be more practical to test specific components rather than the model as a whole. Therefore, the ICF model may be better applied to research as a conceptual framework than a theoretical model for testing.

2.3 Well-being/ Quality of Life

"Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, 2011, para 2). Well-being is a state in which any and every person is able to reach satisfaction in comfort, health, and happiness (Oxford University Press, 2013). Moreover, well-being is where individuals are able to cope with the normal stresses of life, where they are able to contribute to their families and community, and where they are able to see the possibilities of their future (WHO,

2011). The QOL an individual has can be influenced by their ability to participate in social, economical, cultural, spiritual, and civic affairs. The WHO has put forth a policy framework for "Active Ageing" (WHO, 2002). This is a process of optimizing an individual's opportunities for health, social participation, and security to aid in enhancing and extending QOL as individuals age. Therefore it is important to focus on the well-being of young and middle aged adults in order to maintain or improve well-being and QOL as this cohort ages.

2.3.1 Mobility and Well-being

The satisfaction one has with one's own life can impact one's overall health and well-being. Disability can negatively impact life satisfaction and well-being. Most of the research that has explored mobility disability and well-being has been conducted among older adults who have physical disabilities (Falsarella, Coimbra, Neri, Barcelos, Costallat, Carvalho, & Coimbra, 2012; Levasseur, Desrosiers, & Noreau, 2004; Mollaglu et al., 2010; Poulin &Desrosiers, 2009; Tarsuslu-Simsek, Tutun-Yumin, Sertel, Ozturk, & Yumin, 2011.). In a quantative study conducted by Mollaglu et al. (2010), exploration of mobility and life satisfaction was performed by face-to-face interviews with 78 elderly patients (70.28 ± 9.70 years) living in nursing homes. Findings indicated that mobility and life satisfaction were significantly positively correlated. Age, gender and chronic diseases affected mobility, and life satisfaction was related to age, education level, and health perception. Overall the elderly with disabilities in this study had significantly lower life satisfaction. Further, another study found a positive association with older adults with mobility disabilities and the level of social participation and the satisfaction

with level of social participation (Poulin & Desrosiers, 2009). This study aimed to document the test–retest reliability of the LIFE-H Satisfaction scale in older adults having functional disabilities, as well as to explore the relationships between level of participation of older adults with disabilities and satisfaction regarding their level of participation through questionnaires in an interview format. Poulin and Desrosiers (2009) examined 30 people aged 65 and older who had significant functional disabilities. The researchers highlighted the importance of assessing the satisfaction the individual has with their level of social participation in addition to the amount of actual social participation achieved. Levasseur et al. (2004) found that elderly adults living with physical disabilities associated being able to fulfill social roles as being more important to their QOL than completing ADLs. This was a cross-sectional study with a convenience sample of 46 adults aged 60-90 living in the community. The researchers suggested more studies are needed to clarify how social participation influences QOL at the age population.

Degree of mobility and associated pain levels significantly impacts one's QOL (Bakula et al., 2011; Cho et al., 2013; Falsarella et al., 2012; Kikuchi et al 2011; Ozdemir, 2011). Cho et al. (2013) conducted a mixed methods study, collecting data by means of interviews, self-administered questionnaires, and clinical examinations. Findings showed that pain was an independent factor for anxiety and depression within 131 patients with Rheumatoid Arthritis. Cho et al. also found that in their measures of QOL that 64%of individuals had difficulties with usual activities and 89.9% of individuals had discomfort and pain.

More difficulty performing ADLs has been found to be linked to increases in

depression among individuals with mobility disabilities (Meltzer et al., 2012). Activity restriction in social participation is also associated with reduced QOL. Much of this research has been conducted among older adults. For example, Levasseur, Desrosiers, & St-Cyr Tribble (2008) conducted a cross-sectional study looking to see if QOL, participation (level and satisfaction) and perceived quality of the environment (facilitators or obstacles in the physical or social environment) of community-dwelling older adults differ according to level of activity. The sample included 156 individuals who lived at home with ranging levels of activity limitations (none, slight, severe). Findings showed that those with a more constrained activity level had more restrictions with social participation and further believed to have added obstacles in the physical environment. Overall from a personal and societal impact, activity limitations allow for fewer opportunities to be satisfied with life. This could produce a more negative QOL (Levasseur et al., 2008).

2.3.2 Social Participation and Well-Being

Life satisfaction is often thought of as a sense of well-being, happiness, or QOL. Its focus is on how and why people experience and observe their life in positive ways (Edginton, Degraaf, Dieser, & Edginton, 2006). Dijkers (1997) found that life satisfaction is more strongly related to participation than to impairment or activity limitations. Other research has also documented that life satisfaction is greater for those who are involved in productive activities such as work, education, and recreation (Post, Van Dijk, Van Asbeck, & Schrijvers, 1998). There is considerable research that has concluded that the more activities (social and leisure) an individual participates in, the

higher they self-rate their health, life satisfaction, and QOL (Creek, 2008; Gilmour, 2012; Herzog et al., 2002; Hyyppa, Marku, & Maki, 2003; Janke, Nimrob, &Kleiber, 2008; Kinney & Coyle, 1992: Lantz, Marcusson, Wressle, 2012; Lee et al., 2008; Levasseur et al., 2008; Thompson, 2012).

The importance of social and leisure activities is valuable in maintaining health and well-being as one ages among young, middle and older adults (Abraham et al., 2012; Hoglundet al., 2009; Holmes & Joseph, 2011; Janke et al., 2012; and Lee et al., 2008). Leisure satisfaction is one of the most significant predictor of life satisfaction (Kinney & Coyle, 1992). Social participation significantly decreases as people age, but the influence of social participation on health increases with age (Lee, et al., 2008). Therefore satisfaction with participating in social and leisure activities is important to overall health and well-being. Pressman et al. (2009) found that those who enjoyed their leisure activities had positive associations with psychosocial and physical measures (i.e., lower blood pressure, total cortisol, waist circumference, and body mass index, and perceptions of better physical function) that are relevant to health and well-being. Satisfaction with participation has been found to be a main contributor to well-being among older adults (Anaby, Miller, Eng, Jarus, Noreau, & Grp, 2011; Herzog, Ofstedal, & Wheeler, 2002; and Levasseur et al., 2010). Ultimately activities contribute to better physical and mental health among older adults (Herzog et al., 2002). Therefore social participation is an important factor to consider when examining individuals health, well-being and QOL.

Social participation has been linked to a greater sense of well-being and emotional health therefore improving QOL (e.g., Levasseur et al., 2004). The influence of social contact on adults with physical disabilities is important in that it may prove possible to

identify persons at high risk for deterioration in functioning by measuring their level of social contact (Patrick et al., 1986). Patrick and associates (1986) in a panel study found that respondents with physical disabilities (583 adults age 45-75 years living at home with a preexisting physical illness) who had a higher level of social contact experienced less of a decrease in psycho-social and emotional functioning compared to respondents with lower levels of such support. Rolfe et al. (2009) conducted a qualitative study strictly on women living with disabilities and their barriers to exercise. The study consisted of 15 female participants between the ages of 25 and 74 with a variety of unspecified disabilities and severities. The study found that participants felt that exercise improved their sense of social well-being by increasing their fitness and providing them with the stamina necessary to fully participate in social engagements and activities. They also found that the women felt that exercise improved their mental well-being by reducing stress and providing a means of social interaction. Exercise therefore helped them maintain independence. Ditor et al. (2003) conducted a study looking at the effects of an exercise-training program on strength, arm ergometry performance, and psychological well-being of middle aged (42.3±3.6 years) patients (n=11) with spinal cord injuries. This was a 9month randomized control trial exercise program. The program was completed twice a week (90-120min) and consisted of: a warm-up (wheeling and stretching); arm ergometry (15-30min at a Borg (1-10 scale); resistance training (3 sets per exercise at 70-80% of one repetition maximum). Measures were taken at 3, 6, and 9 months. A follow up study (Ditor et al., 2003) was conducted that gave the participates (n=7) that completed the 9 month exercise training program the option to continue the program as they desired for another 3 months. Ditor et al.'s study examined voluntary

continuation of exercise training and the psychosocial benefits. They discovered that there was a significant adherence decrease 3 months later, as well as a decrease in perceived QOL and increase in stress and pain. Based on these results the authors concluded that exercise was related to quality of well-being. Thus, social participation (whether social and passive or active) is important to enhancing well-being and QOL among individuals with physical disabilities.

2.4 Barriers and Facilitators

Barriers and facilitators are elements that can aid or hinder physical activities performance and social participation. There are many personal and environmental factors that discourage people with mobility disabilities from full participation in their community. These personal and environmental factors can act either as barriers or facilitators to participation depending on such things as availability, access, and opportunity.

2.4.1 Personal Factors

Personal factors can include factors such as: sociodemographics, lifestyle, habits, and coping (WHO, 2001). Sociodemographics such as age, gender and income, are important determinants of health (Mackenbach, Van den Bos, Joung, Van de Mheen, & Stronks, 1994; Rapheal, 2009). These factors can have a substantial impact on disability status, and thus health, well-being and QOL, among individuals who have a mobility disability. Previous research has shown that age is a very crucial variable in predicting an increased risk of individuals suffering from a mobility disability (Avlund, Osler, Damsgaard,; Christensen, & Schroll, 2000; Clarke et al, 2009; Espelt, Font-Ribera,

Rodriguez-Sanz, Artazcoz, Ferrando, Plaza, & Borrell, 2010; and Gill, Allore, Hardy, & Guo, 2006). The majority of the research on mobility disabilities has been conducted among older adults 45+ or 65+ (Avlund et al., 2000; Brenes, Guralnik, Williamson, Fried, Simpson, Simonsick, & Penninx, 2005; Boyle, Buchman, & Bennett, 2010;Clarke et al., 2008;Clarke et al., 2009;Espelt et al., 2010;Giles, Metcalf, Glonek, Luszcz, & Andrews, 2004;Gill et al., 2006; Gruenwald, Karlamangla, Greendale, Singer, & Seeman, 2007; James, Boyle, Buchman, & Bennett, 2011; Keysor, Jette, LaValley, Lewis, Torner, Nevitt, & Felson, 2010; Levasseur et al., 2004; (Mcllvane, 2007; Mollaoglu et al., 2010; Noreau et al., 2004; Patrick et al., 1986; Poulin et al., 2009; Rejeski et al., 2008; Shumway-Cook, Patla, Stewart, Ferrucci, Ciol, & Guralnik, 2003; Shumway-Cook, Patla, Stewart, Ferrucci, Ciol, & Guralnik, 2005). Adults aged 65+ in Canada have the lowest amount of participation (52%) in social activity groups (Statistics Canada, 2004). Thus, as an individual with a mobility disability ages, we would expect that he or she would be at an even greater risk of decreased participation in social and leisure activities – a double jeopardy effect.

Gender is also an important sociodemographic variable (personal factor) to consider as previous research has reported that females tend to be at a higher risk for mobility disabilities (Clarke et al., 2009; Gill et al., 2006; Mcllvane et al., 2007; Patrick et al., 1986). With regard to mobility, Avlund et al. (2000) found that more women (71%) compared with men (59%) felt tired during mobility, and more women (22%) than men (14%) were in need of help with their mobility. Women also tend to have less social participation and greater limitations to participation compared to men. In 2012, Lantz et al. found that women had greater limitations over men in autonomy indoors and outdoors.

Women were also more affected than men having further perceived limitations in participation. The researchers state this is accordance to other research that states elderly men have better health and perceive fewer occupational performance problems than elderly women. In 2003 Statistics Canada reported that more men (63%) were involved in social activity groups compared to women (57%). Social roles are often provided as reasons for women having less social participation compared to men. For example, previous research found that older women usually perform the care of others (Antonucci, 1990; Stone, Cafferata, & Sangl, 1987) which may reduce available time for social and leisure activities. Although women have greater mobility disability there are inconsistent results with gender in terms of social participation. For example, Herzog et al. (2002) found that older women dominate in housework and social activities.

Education, employment and income are personal factors that influence both mobility and social participation. Lower education has been demonstrated to affect the amount of social participation among individuals who have a mobility disability (Barf et al., 2009; Clarke et al., 2009; Mcllvane, 2007). In terms of employment, Statistics Canada (2010) found that individuals with a disability work fewer hours per year than those without a disability. A study conducted in Korea (Park, Yoon, & Henderson, 2007) found that individuals with mobility disabilities have significantly lower percentage of employment (34.2%) compared to the general population (60.3%). As well among the 34% percent that were employed only 13% were employed full time. Lack of employment is a significant barrier to those with a mobility disability and also creates fewer opportunities for social participation (Park et al., 2007). A Japanese study found that employment status and income were important for the maintenance of QOL (Kikuchi

et al., 2011). Kikuchi et al.'s (2011) study suggests that employment status will have an effect on the amount of social participation an individual with mobility disabilities may partake in. Low-income status is another variable that influences both mobility disabilities and social participation (Mcllvane et al., 2007; Nilsson, Juul, Avlund, & Lund, 2010b). Espelt et al. (2010) found that the population of individuals within lower economic status have a higher rate of disability; this was also found in a longitudinal study by Nilsson, Avlund, & Lund (2010a) in a Danish community. In terms of population research, people with lower incomes tend to have more severe disability status. Higher severity in disability status may also lead to lower income. This may be due to not being able to afford or have the proper coverage for health care or aids and assistive devices, thus increasing disability severity and reducing employment and income opportunities. Even if an individual can afford the costs related to health care, aids, assistive devices and other needed resources; these costly expenditures can greatly reduce one's income for other mandatory and discretionary costs.

Lifestyle and coping habits of an individual with mobility disabilities are two personal factors that can create a substantial difference in the life one lives and enjoys. The actions taken by individuals to enhance their life or to prevent further mobility restrictions can have an effect on their overall health. Zemper (2003) designed a study testing a holistic wellness program on 43 individuals with spinal cord injuries, measuring physical and psychosocial variables. Psychosocial conditions may include the presence of depression and long-term adjustment problems related to losses in employment, marriage, and life satisfaction. Those in the intervention group attended six half-day wellness workshops over 3 months. The sessions covered physical activity, nutrition,

lifestyle management, and the prevention of secondary conditions. They found people with spinal cord injuries who participated in the workshops had fewer and less severe secondary conditions (e.g., chronic urinary tract infections, decubitus ulcers, and spasticity). Overall the researchers highlighted that self-efficacy improved significantly in the intervention group, putting an emphasis on the importance of this factor in supporting changes in health-promotion behaviours and QOL (Zemper, 2003).

Ravesloot and associates (2005) conducted a study based on the findings from Seekins, Clay, and Ravesloot (1994) that certain health promotion strategies (physical activity and nutrition) were capable of lowering the incidence and severity of secondary conditions among adults with physical disabilities. Ravesloot, Seekins, & White (2005) performed an intervention on adults (N = 188) with mobility disabilities that was goal-focused on lifestyle changes. The curriculum consisted of 10 chapters: Goal Setting, Problem Solving, Attribution Training, Depression, Communication, Information Seeking, Nutrition, Physical Activity, Advocacy, and Maintenance. The first six chapters establish goal pursuit, and the final four chapters encourage health behaviour change to facilitate meeting QOL goals. This intervention supported the findings of Seekins et al. (1994) using the *Living Well with a Disability Health Promotion* intervention. This intervention showed a significant reduction in the average degree of limitations persons reported for secondary conditions (e.g., urinary tract infections, pressure sores, and depression), amount of symptom days, and health care costs.

2.4.2 Environmental Factors

Environmental factors are those that take place extrinsically. They can include

factors such as attitudes of society, architectural characteristics/built environments, legal systems/polices family support, and material circumstances (WHO, 2001). Persons with mobility disabilities have difficulty accessing social and leisure settings including: fitness and recreation facilities, health clubs, libraries, public building, and coffee shops. These difficulties are likely partly due to environmental barriers that have been reported within these settings. Barriers include things such as inadequate bathrooms and equipment, lack of suitable programs, and knowledge of staff. These barriers can limit accessibility or modifications and thus limit both the quantity and quality of participation among individuals with a mobility disability (Arbour-Nicitopolos & Ginis, 2010; Rimmer et al., 2005). Rimmer, Hsieh, Graham, Gerber, & Gray-Stanley (2010) conducted a pilot study on obese African American women and found that they had high disability as a constraint to participation. Lack of knowledge, aids, and accessibility were barriers to physical activity that they encountered. Rimmer et al. (2010) conducted an intervention study in order to reduce these barriers with the goal of increasing physical activity participation. Participants received weekly calls for a period of 6 months. Calls varied in length from 15 to 30 minutes and included a discussion of current health issues and new or persistent barriers to physical activity participation. Each week's phone session was used to assist the participant in identifying the barriers to physical activity that she experienced, problem solving and setting goals around those barriers, and monitoring the status of current and emerging barriers (e.g., being unable to access a fitness center because of stairs once the barrier of transportation to the center was removed). The study's telephone intervention caused a significant increase in physical activity (structured exercise, indoor physical activity, and total physical activity) in a predominantly severely

obese African American group of women with mobility disabilities. The barriers that were more highly reduced include “don’t know how to exercise” and “don’t know where to exercise”.

Environmental barriers (lack of accessibility to ADLs, public transportation, etc.) in the community can create large barriers for individuals with mobility disabilities. Whiteneck et al. (2004) found that environmental factors are more strongly related to life satisfaction than social participation. Shumway-Cook and colleagues (2003, 2005) conducted two different studies finding that environmental features were associated with avoidance of physically challenging activities and affected ADLs among persons with mobility disabilities. Keysor et al. (2010) found that one third of individuals over 65 years of age were living in communities with high mobility barriers and low transportation facilitators. As people age and develop more mobility disabilities, they become more dependent on their local communities, especially when they are no longer able to drive. Uneven or discontinuous sidewalks, heavy traffic, and inaccessible public transportation are just some of the built environment characteristics that can create barriers for outdoor mobility in later adulthood (Clarke et al., 2009). Other research has found that transportation and the accessible environment impact and restrict social participation and functional activities (Barf et al., 2009; Clarke et al., 2009; Keysor et al., 2010; Wessels et al., 2004). Markham & Gilerbloom (1998) conducted a study in Houston, Texas assessing housing areas for accessible and continuous sidewalks and bus shelters. Their findings showed that in 75% of the respondents’ neighbourhoods these environmental elements were non-existent. This suggests that individuals with mobility disabilities are more likely restricted in the amount of social participation that they can

take part in due to the inaccessibility of their surrounding environment. Williams et al. (2004) conducted a study comparing outdoor recreation participation (e.g., jogging, hunting, day hiking, canoeing, sightseeing, attending concerts) among individuals with and without mobility disabilities. Fourteen different constraints were identified. There were significant differences found in the reporting of half of the constraints among those with and without mobility disabilities. People with mobility disabilities reported having higher constraints in the following areas: personal health, inadequate transportation, concerns with personal safety, inadequate facilities, poorly maintained areas, pollutions problems, and lack of assistance for mobility problem. This research shows that more accessible public services and facilities need to be available for individuals with mobility disabilities in order to provide equal opportunities for participation.

Social support involves the inclusion of family members, friends, and neighbours in one's life. Social support can be a significant factor to the well-being of individualswith chronic physical restrictions (Anaby et al., 2011). Having support (physical assistance or emotional) to complete and participate in life activities is important for individuals with physical restrictions. Ekstrom, Ivanoff, & Elmstahl (2013) found that informal support (i.e., help with ADLs) was beneficial in maintaining social support and an active life for older adults with fractures (i.e., mobility disabilities). Social networks with relatives have been found to be protective against disability in mobility (Giles et al., 2004). Individuals with social support (available in close geographic proximity) have higher QOL (Lantz et al., 2012).

The degree of participation among individuals with mobility disabilities is affected by a multitude of barriers and facilitators that are unique to them. Future

research should consider all the research in different areas of barriers and facilitators to develop interventions that will create a greater success of participation in social activities. Finding the major barriers and facilitators that are most unique to those with mobility disabilities can lead to enhancement in policy or physical environments creating less restriction.

2.5 Rationale, Gaps, and Research Questions

The current study will offer valuable insight into the understanding of the personal and environmental factors that affect social participation among young and middle-aged adults. This topic is valuable because social participation is an essential part of life and the amount of social participation an individual has affects health, well-being, and overall QOL. Individuals who have greater social participation tend to have a greater well-being and QOL (e.g., Alriksson-Schimdt, Wallander, & Biasini, 2007; Fang, 2009). Individuals who have a prevalence of disabilities face a larger number of barriers everyday, which can have a negative impact on QOL. These indicators can also be in relation to social expenditure for health and social care (Espelt et al., 2010). Due to the greater amount of barriers individuals with physical disabilities face, more specifically the restriction in everyday functioning, research is needed to determine factors that can be targeted to improve this population's social participation and therefore QOL.

The research thus far in the area of social participation or in similar areas involving persons with mobility disabilities is dispersed, lacks large scale studies, and tends to focus on older adults rather than adults who are younger than the age of 65. The majority of the studies reviewed consisted of small sample sizes. Large-scale national

studies are needed in order to find factors that impact social participation and well-being among adults with mobility disabilities. Due to the lack of research with young and middle-aged adults with physical disabilities in general and with a focus on social participation in particular there is a need for more information regarding the major barriers and facilitators to participation among this population. The majority of research on mobility disabilities involves older adults. Research in mobility disabilities among young and middle aged individuals would help in prioritizing prevention strategies for decreasing activity limitations toward social participation and thus increase well-being. In targeting a younger age group of adults, research may lead to better awareness and strategies to improve QOL at this life stage, which may have an effect on the well-being of future older adults with mobility disabilities. The majority of research has been conducted on physical disabilities (including mobility disabilities) in general or on specific types of mobility disabilities (e.g., multiple sclerosis and rheumatoid arthritis). Thus there is a lack of research, which has focused on the general population of individuals with mobility disability. Focusing on all mobility disabilities instead of just one, may be useful in identifying common constraints to social participation which can be targeted in terms of interdisciplinary policies, resources and services.

The purpose of this study is to explore what environmental and personal factors are most influential in affecting social participation among adults (20 to 64 years of age) with mobility disabilities in Canada. The research questions to be explored are: (1) What barriers are associated with reduced social participation among adults with mobility disabilities? (1b) Are the major barriers to social participation personal or environmental? (2) What are the facilitators that are associated with increased social

participation among adults with mobility disabilities? (2b) Are the major facilitators to social participation personal or environmental?

CHAPTER 3: METHODS

This study is a secondary analysis of data from the Canadian 2006 PALS. The nationally representative survey designed to collect information on adults and adolescents who have a disability (i.e., people whose everyday activities are limited because of a chronic condition or health problem). The purpose of this study is to explore what environmental and personal factors are most influential in affecting social participation among adults (20 to 64 years of age) with mobility disabilities in Canada. The aim was also to understand the relationships between social participation, activity limitation and barriers and facilitators to participation among this population. The research questions to be explored were (1) What barriers are associated with reduced social participation among adults with mobility disabilities? (1b) Are the major barriers to social participation personal or environmental? (2) What are the facilitators that are associated with increased social participation among adults with mobility disabilities? (2b) Are the major facilitators to social participation personal or environmental? This chapter provides an overview summarizing the design and data collection of PALS, the variables of interest, and the data analysis for this study.

3.1 Secondary Data Analysis Design

Secondary analysis is when a previously collected set of data is used for another purpose than originally intended (Neuman, 2004). Advantages to using this type of design are the ability to focus more on analyzing the data as it has already been collected, cleaned, and formatted. A secondary data analysis also allows individual researchers

access to large data sets which he or she normally would not have the capacity to collect due to the large sample sizes involved and the large number of variables examined. The data collection of PALS can be deemed to be representative of the national population as it is a federal survey done by experts who specialize in conducting random national surveys. Variables in PALS have been developed to suit the original purpose of the study; thus a limitation of secondary data analysis is that variables have been conceptualized and operationalized in a manner that limits the research questions and data analysis of the secondary study (Boslaugh, 2007).

3.1.1 Participation and Activity Limitation Survey

PALS is a nationally representative, post censual, telephone-based, cross-sectional survey designed to collect information on adults and adolescents, 15 years of age and older, who have a disability. Funded by Human Resources and Social Development Canada and conducted by Statistics Canada, PALS provides essential information on the prevalence of various disabilities; existing supports for persons with disabilities; and the employment profile, income and participation in society of Canadians with disabilities. Disability in this survey is defined as activity limitation or participation restriction due to a long-term mental, physical, health-related condition. The objective of PALS is to support research in the area of disability and to assist in social policy development.

Data for PALs were collected between November 2006 and February 2007 (Statistics Canada, 2009b). PALS used a two-phase stratified random sample. The first phase involved the 2006 Canadian census. This allowed for the estimation of frequency weights both by province/territory and age group. In the long-form of the Census,

respondents were asked two filter questions: (1) Do you have any difficulties hearing, seeing, communicating, walking, climbing stairs, bending, learning, or doing any similar activities?; and (2) Does a physical or mental condition or health problem reduce the amount or kind of activity you can do at home, work or school, or other activities such as transportation or leisure? The second phase of the sampling included all persons 15 years of age or older who answered yes to one of the two activity limitation questions on the census (*N* = 47,793; 38,839 adults and 8,954 children), and who lived in Canada at the time of the survey.

The data were collected in all provinces and territories but for practical reasons excluded some collective household dwellings, First Nation communities, and those in institutions. The data for the second phase was collected by voluntary telephone interview survey. Interviews by proxy were allowed for those who did not speak English or French or could not respond to the survey due to a physical or mental condition (Statistics Canada, 2006).

The PALS instrument consisted of more than 20 modules of questions (746 variables) pertaining to:(a) the type and severity of the individual's disability(ies) (i.e., hearing, vision, communication, mobility, agility, pain, learning, memory, developmental or psychological); (b) socio-demographic information (data obtained from the 2006 Census in order to not overburden the participants with repeated questions); (c) the need for and use of aids; (d) housing (e.g., specialized features and modifications to the home); (e) care/assistance received with ADLs; (f) medication and drug use; (g) health care and social service utilization; (h) healthy utility; (i) social contacts; (j) satisfaction with life;

(k) discrimination; (l) transportation; (m) labour market activities; and (n) participation in and barriers to leisure, recreation and volunteer activities.

3.1.2 Sample

The original size of the PALS 2006 sampling frame consisted of 47,793 individuals. Of the 47,793 individuals who met the criteria for Phase 2, 28,632 individuals volunteered to participate in the PALS survey (response rate of 59.9%) (Statistics Canada, 2009b). For the purposes of this study a sub-sample of respondents was selected whom: (a) reported having a mobility disability and (b) were 20 to 64 years of age. Mobility disabilities are impairments (i.e., loss or abnormality in body structure or physiological function) involving activity limitations (i.e., difficulties executing a task or action, ranging from slight to severe) and participation restriction and can limit, restrict, and negatively impact involvement in life situations determined by expectations set by society and culture (WHO, 2001). The existence of a mobility disability was extrapolated from the responses to the module on mobility. This module contained filter questions related to the frequency and severity of difficulty individuals experienced while: (a) walking ½ km; (b) walking up and down approximately 12 steps without resting; (c) carrying 5 kg for 10 meters; (d) standing in one spot for > 20 min; and (e) moving from one room to the other. A binary variable was created indicating presence or absence of mobility disability. It should be noted that having a mobility disability did not preclude having another type or types of disability (i.e., hearing, seeing, communication, agility, pain, learning, memory, developmental or psychological); that is, the individuals in this sample may have other disabilities in addition to mobility disabilities. Among the 28,632 participants in the total

data set 11,169 were identified as having a mobility disability. This study was only interested in young to mid-adults with mobility disabilities. Therefore, the sample was further reduced, leaving a final subsample of 6,105 participants.

3.2 Variables and Operational Definitions

Several sociodemographic and disability status variables were examined to provide a profile of Canadians with mobility disabilities between the ages of 20 and 64. This secondary data study focused on the environmental and personal factors that could be considered either barriers to or facilitators of social participation. Based on the ICF model, the variables of interest from the PALS survey were conceptualized as either a personal (i.e., background of an individual's life and living) or environmental (i.e., extrinsic to the individual and make up the physical, social, and attitudinal environment) factor (see Table 1). These personal and environmental factors were further categorized as either a barrier (i.e., factors that reduce or inhibit social participation) or facilitator (i.e., factors that increase or maintain social participation). Sociodemographic variables (personal factors) were conceptualized as being either barriers or facilitators; some variables could be a barrier while others could be a facilitator and categories within the variables (e.g., male or female for sex) may influence social participation differently. It was necessary to categorize the variables in order to manage the data analysis.

Table 1: Conceptualization of Personal and Environmental Factor Variables

	Barrier	Facilitator
PersonalFactors	Disability Status Disability as Barrier to Activity Lack of Aids Stress Sociodemographics	Use of Aids Self-rated health status Satisfaction with Life Life happiness Sociodemographics
Environmental Factors	Need for Assistance with Activities of Daily Living Need for Additional Assistance with Activities of Daily Living Lack of Accessibility Features in Home Barriers to Leisure	Assistance with ADLs Use of Accessibility Features in Home Social Support

3.2.1 Variables

Social Participation

Participants were asked whether or not they participate in seven social participation activities on a 5-point Likert-scale (0 = “Never”; 1 = "Less than once a month"; 2 = "At least once a month"; 3 = "At least once a week"; and 4 = "Every day"): 1) 3 at home activities (watch/listen to TV, videos, radios, CDs; read; talk on telephone with family/friends); and 2) 4 outside of home activities (visit family or friends; exercise, walk, play sports; attend sporting or cultural events; visit museums, libraries, parks). A frequency score for in-home social participation was calculated by summing the 3 activities; scores could range from 0 to 12, with higher scores indicating greater participation in in-home activities. Similarly, a frequency score for outside the home social participation was calculated by summing the 4 activities; scores could range from 0 to 16, with higher scores indicating greater participation in outside of home activities. A

total frequency of social participation score was calculated by summing all seven activity items; scores could range from 0 to 28, with higher scores indicating greater frequency of social participation.

Socio-Demographics

The socio-demographic information that was used in the current study included: sex(0 = male; 1 = female); age group ("20 to 24"; "25 to 29"; "30 to 34"; "35 to 39"; "40 to 44"; "45 to 49"; "50 to 54"; "55 to 59"; and "60 to 64"); language (i.e., mother tongue); marital and family status; number of children; education level; student status; employment status; employment and household income; and urban/rural status.

Disability Status

Disability status and related variables were also examined from the data set. This included the cause of the main disability condition (i.e., disease or illness; ageing; work conditions; stress; an accident or injury; or other cause). PALS classifies each disability condition based on the International Classification of Disease (ICD 10). The ICD classification includes: infectious and parasitic diseases, neoplasms; diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism; endocrine, nutritional and metabolic; mental and behavioural disorders; nervous system; eye and adnexa; ear and mastoid process; circulatory system; respiratory system; digestive system; skin and subcutaneous tissue; musculoskeletal system and connective tissue; genitourinary system; pregnancy, childbirth and the puerperium; or certain conditions originating in the perinatal period. Disability severity (i.e., no severity; mild; moderate; severe; or very severe); presence of various limitations (yes/no) and their

severity (i.e., no disability, less severe, more severe) including mobility, agility, pain, hearing, vision, and communication limitations; and duration of the limitation were also examined. Health care utilization, which included medication use and frequency of health care visits (i.e., physician, physiotherapy, chiropractor, and massage therapy), was also examined.

3.2.2 Personal Barrier Variables

Disability as Barrier to Activity

Participants were asked to rate the frequency in which three disabilities (mobility, agility, and pain) made it difficult to join or participate in activities on a 5-point Likert-scale (1 = "never"; 2 = "less than once per month"; 3 = "monthly"; 4 = "weekly"; and 5 = "daily"). A summed score for frequency of disability as a barrier to activity was calculated; scores ranging from 1 to 15 with higher scores indicating greater frequency of barrier. Similarly, participants rated these four disabilities in terms of the severity of the disability as a barrier to joining or participating in activities on a 4-point Likert-scale (1 = "participation not affected"; 2 = "some difficulty"; 3 = "a lot of difficulty"; and 4 = "completely unable to participate"). A summed score for severity of disability as a barrier to activity was calculated; scores ranging from 1 to 12 with higher scores indicated greater barrier severity. A total disability as barrier to activity score was calculated for each individual as the sum of the product of each of the disability as barrier to activity frequency and severity scores (i.e., mobility, agility, and pain); scores ranging from 3 to 60, with higher scores indicating greater activity barriers due to the disability.

Lack of Aids

Participants were asked if there were any aids that he or she needed, but did not have to assist them with various limitations (i.e., mobility and agility). If a need was identified, participants were asked about their need of 10 aids/equipment for difficulty moving around (e.g., orthopaedic footwear, wheelchair, grab bar, other) on a dichotomous scale (yes/no). A summed score for number of needed mobility aids was calculated (ranging from 0 to 10). Similarly, if respondents identified a need for an aid to assist with agility, participants were asked about their need of 4 aids/equipment for difficulty with agility (i.e., arm brace, grasping tools, adapted kitchen and other). A summed score for number of needed agility aids was calculated (ranging from 0 to 4). The questionnaire did not ask respondents about their need for aids to assist with pain. A total score of number of aids needed (i.e., mobility and agility) was calculated by summing these two variables; scores ranging from 0 to 14 aids.

Reason for Lack of Aids

A subset of 359 participants who identified having a lack of aids was asked to indicate whether seven barriers were reasons for not having aids (i.e., not covered by insurance, too expensive, condition not serious enough, don't know where/how to obtain, not available, on a waiting list, haven't looked into it) on a dichotomous scale (yes/no).

Stress

Participants were asked to report the amount of stress they perceived on most days on a 5-point Likert scale (1= "Not at all stressful"; 2 = "Not very stressful"; 3 = "A bit

stressful"; 4 = "Quite a bit stressful"; and 5 = "Extremely stressful”). Additionally participants were asked to report the main source of stress (i.e., work, financial concerns, family, school work, health, and other).

3.2.3 Environmental Barrier Variables

Assistance with Activities of Daily Living

Need Assistance with Activities of Daily Living. Among the respondents who did not receive assistance with ADLs, for each of the ADLs participants were asked if they felt that they needed help on a dichotomous scale (yes/no). A summed score for number for ADLS that require help was computed (ranging from 0 to 8).

Need for Additional Assistance with Activities of Daily Living. Among the respondents who did receive assistance with ADLs, for each of the activities participants were asked if they needed additional help from what they currently received on a dichotomous scale (yes/no). A summed score for the number ADLs that require additional help was computed (ranging from 0 to 8).

Lack of Accessibility Features in Home

Participants were asked if there were accessibility features in the home that they needed but did not have. If a need was identified, participants were asked about their need of 11 accessibility features in the home (e.g., ramps, grab bars, lowered kitchen counters) on a dichotomous scale (yes/no). A summed score for number of accessibility features needed was calculated (ranging from 0 to 11).

Barriers Preventing Leisure Activity

Respondents were asked if they would like to do more activities in their spare time (yes/no). If more leisure was desired, participants were asked whether they experienced eight barriers preventing their leisure activity (i.e., disability condition, need special aids/equipment, need someone's assistance, transportation services inadequate, no facilities or programs, facilities and equipment not accessible, too expensive, other) on a dichotomous scale (yes/no). A summed score for number of barriers to leisure was calculated for individuals who indicated a desire for more leisure; scores ranging from 1 to 8 with higher scores indicating a greater number of leisure barriers. A summed score of the number of barriers to leisure was calculated for the overall sample under the assumption that those individuals who did not want to do more activities in their spare time did not experience barriers.

3.2.4 Personal Facilitators Variables

Use of Aids

Participants were asked about their current use of aids/equipment to assist them with various limitations (i.e., hearing, vision, communication, mobility, agility, pain). In this study the focus was on aids for mobility, as well as agility and pain aids considering the high co-morbidity of these limitations among the respondents.

Mobility: Participants were asked about their current use of 12 aids/equipment for difficulty moving around (e.g., orthopedic footwear, wheelchair, grab bar, other) on a dichotomous scale (yes/no). A summed score for number of mobility aids used was calculated (ranging from 0 to 12). A higher value indicates the use of more aids.

Pain: Participants were asked about their current use of 5 aids/equipment for pain (e.g., hot/cold aids, adjustable bed, other) on a dichotomous scale (yes/no). A summed score for number of pain aids used was calculated (ranging from 0 to 5). A higher value indicates the use of more aids.

Agility: Participants were asked about their current use of three aids/equipment for agility (e.g., arm brace, grasping tool, other) on a dichotomous scale (yes/no). A summed score for number of agility aids used was calculated (ranging from 0 to 3). A higher value indicates the use of more aids. A total score for number of aids used was calculated by summing these three variables; scores ranging from 0 to 20 aids. A higher value represents the use of more aids.

Health and Well-Being

The following variables were used as indicators of health and well-being:

Self-Rated Health Status. Participants were asked to rate their perceived health quality on a 5-point Likert-scale (1 = "poor"; 5 = "excellent").

Satisfaction with Life. Participants rated their perceived satisfaction within four life domains (i.e., social, health, job, and leisure). Respondents were asked to report their satisfaction with family, friends, health, job or main activity (e.g., being a homemaker). The way he or she spends his or her time was measured on a 10-point Likert-type scale (1 = "Very dissatisfied"; 10 = "Very satisfied"). An overall average satisfaction with life score was computed across the four life domains.

Life Happiness. Participants were asked if they were usually happy in life on a 5-point Likert-scale (1 = "Happy and interested in life"; 2 = "Somewhat happy'; 3 =

"Somewhat unhappy"; 4 = "Unhappy with little interest in life"; and 5 = "So unhappy that life is not worthwhile").

3.2.5 Environmental Facilitators Variables

Assistance with Activities of Daily Living

Respondents were asked whether they received assistance with nine ADLs due to their condition or disability (e.g., preparing meals, housework, banking) on a dichotomous scale (yes/no). Childcare was removed from the data analysis since not all respondents had dependent children, thus leaving eight remaining ADLs. A summed score for number of assisted ADLs was calculated (ranging from 0 to 8). A higher value indicates that they received more help with their ADLs.

Use of Accessibility Features in Home

Participants were asked about their current use of 11 accessibility features in the home (e.g., ramps, grab bars, lowered kitchen counters) on a dichotomous scale (yes/no). A summed score for number of accessibility features used was calculated (ranging from 0 to 11). A higher score indicates that more accessibility features were used.

Social Support

Quality of social support was not assessed on the questionnaire. Social support in this study was operationalized as the number of living relatives and number of friends' individuals reported having. Participants were asked about the number of living parents, siblings, children, and grandchildren and the number of close friends that he or she had. Scores were calculated for the total number of family and close friends. An overall social

support score was computed by summing these variables to create an overall social support quantity. A higher score represented a greater number of family and close friends, and therefore, greater social support.

3.3 Data Analysis

Descriptive statistics (i.e., frequencies, mean, standard deviation, and standard error) were conducted to present a profile of the sample in terms of sociodemographics, personal barriers and facilitators, and environmental barriers and facilitators. Social participation and all barrier and facilitator variables were screened for potential outliers. The Mahalanobis distances indicated that no outliers were considered to be significant at the .01 alpha level. These variables were also explored for normality (i.e., histograms, skewness and kurtosis, and the Kolmogorov-Smirnov test for normality). None of the variables were normally distributed.

A series of multiple regression models were originally planned for the data analysis. However, inferential statistics were not possible due to the lack of normal distribution of the variables, particularly social participation as the outcome variable. Log transformations were performed to the data but still resulted in non-normal variables, thus transformation were not used. Social participation was collapsed into an ordinal variable based on total social participation scores (ranging from 0-28). Three groups were created representing increasing levels of social participation: low social participation (scores ranging from 0-9), moderate social participation (scores ranging from 10-18), and high social participation (scores ranging from 19-28). A series of ordinal logistic regression models (ordinal logit) were analyzed in order to determine the relation between social

participation groups (an ordinal variable) and (a) sociodemographics, (b) barriers and (c) facilitators. However, for all of these models the assumption of parallelism for ordinal logit models was violated; therefore, multinominal logistic regression was used (Field, 2009; Norušis, 2011). Thus, a series of univariate and multivariate multinominal logistic regression models were analyzed to determine the association (main effects) between social participation groups (i.e., low, moderate, high) and (a) sociodemographic variables (i.e., sex, age group, marital status, education, employment status, rural status, mother tongue, and family status, income); (b) barrier variables (i.e. lack of aids, need for assistance with ADLs, need for additional assistance with ADLs, lack of specialized features in home, severity of disability as barrier to activity, frequency of disability as barrier to activity, product of disability as barrier to activity, leisure barriers, and stress); and (c) facilitators (i.e., use of aids, use of specialized features in home, assistance with ADLs, social support, self-rated health status, satisfaction with life, and life happiness). The low social participation group was the reference category for the outcome variable for all of the models. SPSS (version 19) was used for all data analysis.

CHAPTER 4: RESULTS

The following chapter presents the results compiled for this study. First the descriptive analyses are discussed: sociodemographics, personal and environmental barriers, personal and environmental facilitators, and social participation. The results of the logistic regressions performed to find the associations between social participation and the personal and environmental barriers and facilitators are presented.

4.1 Descriptive Analyses

4.1.1 Sample Description

Descriptive statistics were performed to obtain sample characteristics for socio-demographic variables (see Table 2). Over half of the sample was female (58.3% female and 41.7% male), which is slightly higher than the general Canadian population in 2006 (female 50.9% and male 49.1; Statistics Canada, 2011. The age group with the highest percentage was those aged 40-44. The sample was skewed to higher age groups: 19.8% of the sample were between the ages of 20 and 34; 38.1% between 35 and 49 years of age; and 42.0% who were 50 to 64 years of age. The sample was not representative of the Canadian population in terms of language. English was the mother tongue for the majority of respondents (75.7%), followed by French (15.0%) and 'other' (9.3%) as compared to the Canadian population in 2006, which was composed of a much greater percentage of French and 'other' languages as the mother tongue (57.8% English, 22.1% French and 20.1% 'other' (Statistics Canada, 2011). The majority of individuals with mobility disabilities were married or had common-law partners (58.5%), with only 36.8%

(*n* = 2242) reporting having children. This sample predominately lived in urban areas (70.1%) and lived with their spouse or common-law partner without children (57.7%) as compared to 47.9% of the Canadian population in 2006.

In this sample, 29.1% of the sample completed less than a high school education which is almost double to the Canadian population in 2006 (15%; Statistics Canada, 2011). As well in this sample 9.7% of individuals completed a university degree, which is more than a third less than national levels (23%; Statistics Canada, 2006). Six percent of the sample had attended an education institution in 2006. In Canada 62.8% of the population was employed in 2006 (Statistics Canada, 2006), while only 38.7% of all individuals in this sample were working full or part-time. Due to the high rate of unemployment and retirement, 43% of the sample had no employment income and 12% received less than $5000 per year. In terms of annual household income, over half of the sample received over $40,000 per year.

Table 2: Sociodemographics of Sample

Socio-Demographic Variables	% (*n*)	Socio-Demographic Variables	% (*n*)
Age Group		**Education**	
20-24	8.8 (537)	Less than high school	29.1 (1776)
25-29	5.1 (313)	High school	24.8 (1513)
30-34	5.9 (361)	Trades	14.7 (896)
35-39	10.2 (621)	College	21.8 (1329)
40-44	16.7 (1022)	University	9.7 (591)
45-49	11.2 (685)	**Household Income**	
50-54	12.6 (769)	Less than $20 000	19.3 (1176)
55-59	15.2 (931)	$20 000-$39 999	23.3 (1418)
60-64	14.2 (866)	$40 000-$59 999	20.4 (1245)
Gender		$60 000 +	37.1 (2266)
Female	58.3 (3562)	**Employment Status**	
Male	41.7 (2543)	Full-time	29.7 (1811)
Marital Status		Part-time	9.0 (549)
Divorced/Separated	13.4 (818)	Retired	27.6 (1687)
Married/Common-law	58.5 (3552)	Unemployed	33.7 (2058)
Widowed/currently single	28.4 (1706)		
Census Family Status			
Children	11.4 (696)		
Non-family Persons	22.6 (1375)		
Lone Parents	8.4 (510)		
Common-law partners	9.7 (591)		
Spouses	48.0 (2923)		

N = 6105

Table 3 presents the descriptives for disability status and health care demographics. The ICD classifications for the main disability condition reported included diseases of the musculoskeletal system and connective tissue (52.5%), diseases of the nervous system (7.9%) and injury or other external causes (7.3%). Respondents reported that the cause of the main condition resulted from an accident or injury (27.8%), a disease or illness (25.3%), other causes (21.6%), work conditions (10.0%), ageing (6.7%) and stress (5.0%). Participants reported the degree of severity of their overall disability conditions (co-morbidities) as being mild/moderate (47.9%) or severe/very severe (42.1%); while the majority of respondents reported their mobility disability as being less severe (80.8%). In addition to having mobility limitations, a high percentage

of respondents also reported having pain (85.5%) and agility (89.9%) limitations. On average the sample had been limited by their disability condition for many years (55.6% 10 or more years). In terms of health care utilization, persons with mobility disability indicated a high percentage of medication use (82.4%). Among this sample, 40% of individuals visited a physician at least once a month. Physiotherapy was utilized by 27% of the sample, 15% used chiropractor services, and 17% availed of massage therapy.

Table 3: Descriptives of Disability Status and Health Care Demographics

Disability Status Variables	% (*n*)	Disability Status Variables	% (*n*)
Degree of Severity of Mobility Disability		**Frequency of Physician Visits**	
Less severe	80.8 (4934)	Never	10.1 (598)
More severe	19.2 (1171)	Once a week	5.3 (312)
Reported Disability Limitations		Once a month	35.5 (2109)
Mobility	100.0 (6105)	Less than once a month	49.2 (2923)
Hearing	17.8 (1082)	**Frequency of Physiotherapy Visits**	
Seeing	19.2 (1170)	Never	72.7 (4322)
Communication/Speech	15.6 (950)	Once a week	8.0 (474)
Agility	80.0 (4885)	Once a month	5.7 (341)
Pain	85.5 (5190)	Less than once a month	13.6 (809)
Other	37.9 (2314)	**Frequency of Chiropractor Visits**	
Duration of Limitation		Never	85.1 (5067)
< 1 year	3.3 (194)	Once a week	3.0 (179)
1-2 years	9.9 (579)	Once a month	5.3 (313)
3-4 years	10.8 (631)	Less than once a month	6.6 (395)
5-9 years	20.4 (1197)	**Frequency of Massage Therapy Visits**	
10-19 years	26.7 (1565)	Never	82.9 (4937)
20 +years	28.9 (1691)	Once a week	2.6 (157)
Mobility Limitations		Once a month	5.4 (321)
Able to walk at all	88.4 (1560)	Less than once a month	9.1 (542)
Able to walk around neighbourhood without difficulty or support	69.3 (3980)		
Require support to walk around neighbourhood	63.7 (979)		
Require others help to walk	20.1 (312)		
Wheelchair use	19.9 (350)		

N = 6105

4.1.2 Social Participation

Participants were asked whether or not they participate in seven social participation activities on a 5-point Likert-scale (0 = “Never”; 1 = "Less than once a month"; 2 = "At least once a month"; 3 = "At least once a week"; and 4 = "Every day"). The seven activities were: a) three at home activities (watch/listen to TV, videos, radios, CDs; read; talk on telephone with family/friends); and b) four outside of home activities (visit family or friends; exercise, walk, play sports; attend sporting or cultural events; visit museums, libraries, parks). On average, the sample reported visiting museums, libraries and parks (M = 0.7; SD = 0.92) and attending sporting or cultural events (M = 0.8; SD = 1.00) the least. At least once a month, on average, the sample reported exercising, walking or playing sports (M = 2.1; SD = 1.67) and visiting family or friends (M = 2.2; SD = 1.19). At least once a week, on average, the sample reported and reading (M = 2.8; SD = 1.59) and talking on the telephone with family/friends (M = 3.1; SD = 1.27). Not surprising, the sample reported watching/listening to TV, videos, radio and CDs every day (M = 3.6; SD = 1.02). Therefore, it appears that participants participated more regularly in inside the home activities (Table 4). On average respondents total frequency in social participation activities was moderately low (M = 15.3 on a 28 point scale). In terms of percentiles, a score of 12 marked the 20^{th} percentile, a score of 15 for the 40^{th} percentile, 17 for the 60^{th} percentile and a score of 20 for the 80^{th} percentile.

Table 4: Descriptive Statistics of Social Participation

Social Participation	M	SE	SD	Zskew.	Zkurt.	K-S Test
Inside Home Participation [a]	9.6	0.04	3.06	-57.16	43.96	$D_{(6075)}$ = .247***
Outside of Home Participation [b]	5.7	0.04	3.31	-1.99	-12.24	$D_{(6059)}$ = .089***
Total [c]	15.3	0.07	5.47	-33.15	17.20	$D_{(6036)}$ = .112***

[a]Scores can range from 0-12
[b]Scores can range from 0-16
[c]Scores can range from 0-28
* p< .05; ** p < .01; *** p < .001

4.1.3 Personal Barriers

Barriers to Activity

Disability as Barrier to Activity. Participants were asked to rate the frequency and severity in which three disabilities (mobility, agility, and pain) made it difficult to join or participate in activities. On average, individuals reported that mobility, agility and pain disabilities were barriers to participate in activities on a weekly basis and that these barriers presented a lot of difficulty to activity participation (Table 5). More individuals (n = 5930) reported that their ability to move around (mobility disability) was the major factor in their frequency of having difficulties to participate. Overall most individuals (n = 4823) reported that pain severity was the main reason for having difficulties participating. Considering all three disabilities together, the sample reported that disabilities prevented them from participating in activities on a monthly basis and that the severity presented some difficulty (Table 6). Overall the sample reported a low to

moderate degree of barriers to activity participation due to disability (M = 25.8, with scores ranging from 3 to 60).

Table 5: Specific Disabilities as Barrier to Activity

	Frequency				Severity			
	M [a]	***SD***	***SE***	***n***	***M*** [b]	***SD***	***SE***	***n***
Mobility	3.5	1.54	0.02	5930	2.7	1.37	0.02	4787
Agility	3.7	1.45	0.02	4770	2.7	1.39	0.02	4085
Pain	4.0	1.19	0.02	5093	2.6	1.39	0.02	4823

[a]1 = "never"; 5 = "daily"
[b]1 = "participation not affected"; 5 = "completely unable to participate"

Table 6: Overall Disability as Barrier to Activity

Totals	***M***	***SD***	***SE***	Z_{skew}	Z_{kurt}	**K-S Test** [a] $D_{(df)}$
Total Frequency[b]	9.7	4.43	0.06	-11.793	-17.067	.118*** (6053)
Total Severity[c]	6.6	3.22	0.04	9.649	-15.143	.133*** (5521)
Total Disability as Barrier[d] (freq * sev)	25.8	13.86	0.17	18.761	-5.075	.112*** (5521)

[a]Kolmogorov-Smirnov test
[b]Scores range from 1-15
[c]Scores range from 1-12
[d]Scores range from 3-60 with higher scores indicating more difficulty to participate
* p< .05; ** p < .01; *** p < .001

Lack of Aids

Participants were asked if there were any aids that he or she needed but did not have to assist them with both mobility and agility (Table 7). In this sample, 10.4% (n = 625) identified being in need of a mobility aid. The most commonly needed aids were grab bars, canes, scooters, and other aids for mobility. Seven percent (n = 315) of the sample indicated they were in need of agility aids. Grasping tools and other aids were the

most frequently needed. On average, the sample needed less than 1 out of 14 aids (M = 0.2, SD = 0.57). A subset of 359 participants who identified a lack of aids was asked to indicate whether seven barriers were reasons for not having aids (Table 8). It seems where aids were lacking the main reason was due to cost; approximately 70% of the subsample indicated that aids were too expensive and 40% that the aid(s) were not covered by insurance.

Table 7: Descriptive Statistics for Lack of Aids

	M	***SD***	***SE***	Z_{skew}	Z_{kurt}	**K-S Test** [a] $D_{(6105)}$	**Yes % (*n*)**
Mobility Aids [b]	0.1	0.46	0.01	160.031	554.223	.513***	
Orthopedic footwear							9.9 (62)
Cane/walking stick							18.7 (117)
Manual wheelchair							5.3 (33)
Electric wheelchair							6.7 (42)
Walker							10.2 (64)
Scooter							17.4 (109)
Braces/supportive devices							8 (50)
Grab bar/bathroom aids							26.9 (168)
Bath or bed lifts							7.7 (48)
Other							16.5 (103)
Agility Aids [c]	0.1	0.26	0.003	183.226	645.729	.535***	
Arm brace							12.4 (39)
Grasping tools							34.6 (109)
Adapted kitchen							14.3 (45)
Other							43.8 (138)
Total [d]	0.2	0.57	0.007	160.822	614.865	.493***	

N = 6105
[a]Kolmogorov-Smirnov test
[b]Scores range from 0-10
[c]Scores range from 0-4
[d]Scores range from 0-14
* p< .05; ** p < .01; *** p < .001

Table 8: Reasons for No Aids

Reasons	Yes % (*n*)	No % (*n*)
Not covered by insurance	37.9 (136)	62.1 (223)
Too expensive	68.8 (247)	31.2 (112)
Condition not serious enough	9.5 (34)	90.5 (325)
Don't know where/how to obtain it	15.9 (57)	84.1 (302)
Not available	5.3 (19)	94.7 (340)
On a waiting list	3.9 (14)	96.1 (345)
Haven't looked into it	20.3 (73)	79.7 (286)

n = 359

Stress

Participants were asked to report the amount of stress they perceived on most days on a 5-point Likert scale (1= "Not at all stressful"; 2 = "Not very stressful"; 3 = "A bit stressful"; 4 = "Quite a bit stressful"; and 5 = "Extremely stressful"). The sample perceived being a bit stressful on most days (*M* = 3.2; *SD* = 1.04). In terms of the sources of stress, health was reported as the main source by the majority of participants (31.5%). Work (19.8%) and financial concerns (18.8%) were the also common sources of stress, followed by other sources (15.3%), family (13.2%) and school work (1.4%).

4.1.4 Environmental Barriers

Need for Assistance with Activities of Daily Living

Need for Additional Assistance with Activities of Daily Living. Among the respondents 72% (*n* = 4372) who did receive assistance with ADLs, for each of the activities participants were asked if they needed additional help from what they currently received (Table 9). Of the respondents who received assistance, individuals perceived

they required further help with heavy chores (Table 10) (28.8%), going to appointments/shopping (23.5%), and housework (22%).

Need for Assistance with Activities of Daily Living. Among the respondents who did not receive assistance with ADLs, for each of the ADLs participants were asked if they need help (Table 9). Those that did not receive help indicated they needed assistance with heavy chores (Table 10)(21.9%) and housework (13.6%).

Table 9: Assessment of Assistance with Activities of Daily Living

Activities of Daily Living	**Independent**	**Adequate Help**	**Under-Assisted**	**Unassisted**
	Yes % (*n*)	**Yes % (*n*)**	**Yes % (*n*)**	**Yes % (*n*)**
Preparing meals	67.6 (4130)	23.6(1438)	3.5 (214)	3.6 (219)
Housework	51.8 (3163)	23.6 (1438)	8.4 (512)	8.2 (498)
Heavy chores	30.4 (1853)	41.8 (2551)	16.9 (1033)	8.5 (519)
Going to appointments/shopping	56.8 (3469)	28.5 (1740)	8.7 (534)	4.1 (253)
Banking/bills	81 (4947)	12.7 (776)	2.5 (155)	1.9 (116)
Personal care	84.9 (5186)	10 (609)	1.9 (119)	1.5 (93)
Medical care at home	93.4 (5704)	2.8 (172)	0.5 (33)	1.6 (95)
Moving about inside residence	90.7 (5537)	5.6 (344)	1.0 (59)	1.1 (67)

n = 4353

Assessment of Assistance with Activities of Daily Living. Based on whether individuals received help, needed help, or required additional assistance with ADLs participants were categorized for each of the ADLs as being: 1) independent (i.e., did not receive assistance with ADLs and do not need additional assistance); 2) adequate help (i.e., received assistance with ADLs and do not need additional help); 3) under-assisted (i.e., received assistance with ADLs but need additional help); and 4) unassisted (i.e., did not receive assistance with ADLs but need help). Table 10 illustrates that the majority of

individuals were independently able to complete their activities or received enough assistance with ADLs. Individuals were least likely to be fully independent in the activities of housework, heavy chores, and going to appointments or shopping. This makes sense due to the focus of this study being on persons with mobility disabilities. These same three activities were also the activities that were most frequently under-assisted or in need of assistance (unassisted).

Table 10: Descriptive Statistics for Needing Assistance for Activities of Daily Living

Activities of Daily Living	***M***	***SD***	***SE***	Z_{skew}	Z_{kurt}	**K-S Test** [a] $D_{(df)}$	**Need Additional Assistance with ADLs Yes % (*n*)**	**Need Assistance with ADLs Yes % (*n*)**
Preparing meals							13.0 (214)	5 (219)
Housework							22.0 (512)	13.6 (498)
Heavy chores							28.8 (1033)	21.9 (519)
Going to appointment /shopping							23.5 (534)	6.8 (253)
Banking/bills							16.6 (155)	2.3 (116)
Personal care							16.3 (119)	1.8 (93)
Medical care at home							16.1 (33)	1.6 (95)
Moving about inside residence							14.6 (59)	1.2 (67)
Total Need Additional Assistance with ADLs [b]	0.6	1.12	0.02	67.766	103.593	$.371_{(4373)}$***		
Total Need Assistance with ADLs [b]	0.3	0.77	0.01	109.761	250.986	$.462_{(5982)}$***		

N= 6105

[a]Kolmogorov-Smirnov test

[b]Scores range from 0-8 with higher scores receiving assistance

* $p < .05$; ** $p < .01$; *** $p < .001$

Lack of Accessibility Features in Home

Participants were asked if they lacked but needed accessibility features in the home (Table 11). Few participants indicated a need (6.6%, n = 405). Among those that did identify this need, on average participants stated the need for 2 out of 11 features (M = 1.5; SD = 1.19; Range 1 to 9) and the most frequently needed features were 'other' (32%), ramps (27%), elevator or lift (26%) and grab bars in bathroom (24%). On average, the total sample indicated barely any need for accessibility features in the home (M = 0.1; SD = 0.48).

Table 11: Descriptive Statistics for Lack of Accessibility Features in Home

Accessibility Features in Home	***M***	***SD***	***SE***	Z_{skew}	Z_{kurt}	**K-S Test** [a] $D_{(6105)}$	**Yes % (*n*)**
Ramps							27.4 (111)
Street level entrances							5.9 (24)
Automatic doors							5.9 (24)
Easy to open doors (e.g. lever handles)							6.9 (28)
Widened doorways or hallways							6.9 (28)
Elevator or lift device							25.7 (104)
Visual/audio alarms/warning devices							2.7 (11)
Grab bars							23.7 (96)
Bath lift							7.4 (30)
Lowered counters in kitchen							3.7 (15)
Other							31.9 (129)
Total [b]	0.1	0.48	0.006	269.730	1604.134	.516***	

n = 405
[a]Kolmogorov-Smirnov test
[b]Scores range from 0-11 indicating number of features used
* p< .05; ** p < .01; *** p < .001

Barriers to Activity

Barriers Preventing Leisure Activity. The majority of respondents (*n* = 3801, 62.3%) stated that they would like would to participate in more leisure/activities during their spare time. Participants were asked whether they experienced eight barriers preventing leisure activity (Table 12). Individuals' disability condition was the more frequently reported barrier (46%) among the sample, followed by the expensive of the activity (17%) and 'other' barriers (13%). Among respondents who indicated desire for more leisure, on average they experienced approximately 2 out of the 8 barriers (*M* = 1.7; *SD* = 1.13). Overall, the sample reported an average of experiencing one barrier preventing leisure participation (*M* = 1.0; *SD* = 1.21).

Table 12: Descriptive Statistics for Barriers Preventing Leisure Activities

Barriers	***M***	***SD***	***SE***	Z_{skew}	Z_{kurt}	**K-S Test** [a] $D_{(df)}$	**Yes % (*n*)**
Condition							46.4 (2831)
Need special aids/equipment							3.4 (205)
Need someone's assistance							6.9 (421)
Transportation services inadequate							6.4 (393)
No facilities or programs							5.5 (338)
Facilities and equipment not accessible							3.9 (240)
Too expensive							17.1 (1044)
Other							13.2 (804)
Total Barriers for those who desire more leisure [b]	1.7	1.13	0.019	49.943	51.518	$.349_{(3709)}$ ***	
Total Barriers overall sample [b]	1.0	1.21	0.016	55.504	60.069	$.278_{(6105)}$ ***	

n = 6105
[a]Kolmogorov-Smirnov test
[b]Scores range from 0-8
* $p < .05$; ** $p < .01$; *** $p < .001$

4.1.5 Personal Facilitators

Use of Aids

Participants were asked about their current use of aids/equipment to assist them with mobility, agility and pain limitations (Table 13). Among the total sample, on average aids were not used very frequently: 27% (*n* = 1666) used mobility aids; 11% (*n* = 666) used agility aids; and 35% (*n* = 2212) used pain aids. Frequently used aids included: cane/walking stick (17.1%), grab bar/bathroom aids (13.7%), hot/cold aids for pain

(32.8%) and comfort aids for pain (15.0%). On average, the sample used only 1 out of 20 aids.

Health and Well-Being

Self-Rated Health Status. Participants were asked to rate their perceived health quality on a 5-point Likert-scale (1 = "poor"; 5 = "excellent"). Approximately 20 percent of respondents rated their health as poor, 30.7% as fair, 30.7% as good, 14.8% as very good, and only 4.5% as excellent. On average, the sample reported having fair to good health quality (M = 2.6; SD = 1.10).

Table 13: Descriptive Statistics for Use of Aids

	M	*SD*	*SE*	Z_{skew}	Z_{kurt}	K-S Test [a] $D_{(6105)}$	Yes % (*n*)
Mobility Aids [b]	0.7	1.32	0.02	70.145	75.759	.423***	
Orthopedic footwear							7.9 (6105)
Cane/walking stick							17.1 (6105)
Crutches							2.5 (6105)
Manual wheelchair							5.5 (6105)
Electric wheelchair							1.5 (6105)
Walker							4.2 (6105)
Scooter							1.3 (6105)
Braces/supportive devices							7.3 (6105)
Grab bar/bathroom aids							13.7 (6105)
Bath or bed lifts							2.5 (6105)
Adapted motor vehicle							1.5 (6105)
Other							2.2 (6105)
Agility Aids [c]	0.1	0.39	0.004	111.600	215.736	.4520***	
Arm brace							4.6 (6105)
Grasping tools							5.1 (6105)
Other							2.7 (6105)
Pain Aids [d]	0.6	1.00	0.01	45.218	16.775	.383***	
Electrotherapy device							8.1 (6105)
Hot/cold aids							32.8 (6105)
Comfort aids							15.0 (6105)
Adjustable bed							1.3 (6105)
Other							7.8 (6105)
Total [e]	1.4	1.84	0.02	50.238	44.142	.238***	

N = 6105
[a]Kolmogorov-Smirnov test
[b]Scores range from 0-12
[c]Scores range from 0-3
[d]Scores range from 0-5
[e]Scores range from 0-20
* $p < .05$; ** $p < .01$; *** $p < .001$

Satisfaction with Life. Participants rated their perceived satisfaction within four life domains (social, health, job, and leisure). Participants were most satisfied with their

relationships with family and friends (Table 14). Overall satisfaction with social life (average of satisfaction with family and friends) was high (M = 8.2; SD = 1.79). The sample reported moderate satisfaction with their job/main activity as well with their leisure time. Not surprisingly, participants reported their satisfaction with their health as being the least satisfied. On average, the sample perceived having moderately high satisfaction with domains of life (M = 6.9; SD = 1.62).

Table 14: Descriptive Statistics for Satisfaction with Life Domains

Life Domains	**M**	**SD**	**SE**	**Z_{skew}**	**Z_{kurt}**	**K-S Test [a] $D_{(df)}$**
Family [b]	8.2	2.23	0.031	-41.369	22.922	.219 $_{(5301)}$ ***
Friends [b]	8.3	1.99	0.027	-42.694	35.148	.196 $_{(5280)}$ ***
Health [b]	5.3	2.49	0.034	-1.969	-10.305	.118 $_{(5291)}$ ***
Job/Main Activity [b]	6.7	2.79	0.039	-11.580	-9.174	.123 $_{(5131)}$ ***
Leisure [b]	6.5	2.47	0.034	-10.766	-7.043	.123 $_{(5240)}$***
Total Satisfaction with Life [b]	7.0	1.62	0.02	-13.923	1.324	.046 $_{(5039)}$***

[a]Kolmogorov-Smirnov test
[b]1 = "Very dissatisfied"; 10 = "Very satisfied"
* p< .05; ** p < .01; *** p < .001

Life Happiness. Participants were asked if they were usually happy in life on a 5-point Likert-scale (1= so unhappy that life is not worthwhile, 5= happy and interested in life). The majority of respondents reported being either somewhat happy (26.4%) or happy and interested in life (61.0%). Very few individuals (n = 72) reported being so unhappy that life is not worthwhile. On average, the sample being happy with life (M = 4.4; SD = 0.86).

4.1.6 Environmental Facilitators

Assistance with Activities of Daily Living

Respondents were asked whether they received assistance with eight ADLs due to their condition or disability (Table 15). Over half of respondents received assistance with heavy chores (60.1%) and over a third of the sample received help with housework (38.9%) and going to appointments/shopping (38%). Few respondents received assistance with medical care at home or moving about inside the home. On average, this sample received assistance with 2 out of 8 ADLs.

Table 15: Assistance Received for Activities of Daily Living

Activities of Daily Living	***M***	***SD***	***SE***	Z_{skew}	Z_{kurt}	**K-S Test**[a] $D_{(5941)}$	**Receive Assistance with ADLs Yes % (*n*)**
Preparing meals							27.6 (1662)
Housework							38.9 (2337)
Heavy chores							60.1 (3598)
Going to appointments /shopping							38.0 (2287)
Banking/bills							15.6 (936)
Personal care							12.2 (732)
Medical care at home							3.5 (208)
Moving about inside residence							6.7 (404)
Total Assistance Received for ADLs [b]	2.0	1.91	0.02	27.03	0.20	.189***	

N = 6105
[a]Kolmogorov-Smirnov test
[b]Scores range from 0-8 with higher scores receiving assistance
* $p < .05$; ** $p < .01$; *** $p < .001$

Use of Accessibility Features in Home

Participants were asked about their current use of 11 accessibility features in the home (Table 16). Grab bars, ramps and street level entrances were the most frequently used features among the sample. Only 8% (n = 461) of the sample stated that they used accessibility features to enter and leave their residence. Therefore, on average the sample used less than one accessibility feature in the home.

Table 16: Descriptive Statistics for Use of Accessibility Features in Home

Accessibility Features in Home	***M***	***SD***	***SE***	Z_{skew}	Z_{kurt}	**K-S Test** [a] $D_{(5771)}$	**Yes % (*n*)**
Ramps							4.7 (270)
Street level entrances							4.2 (240)
Automatic doors							1.8 (106)
Easy to open doors (e.g. lever handles)							3.6 (205)
Widened doorways or hallways							3.5(204)
Elevator or lift device							3.7(213)
Visual/audio alarms/warning devices							0.8(47)
Grab bars							5.3(303)
Bath lift							1.1(61)
Lowered counters in kitchen							1.0(59)
Other							1.6(91)
Total [b]	0.3	1.21	0.02	138.490	321.902	.522***	

N = 5771
[a]Kolmogorov-Smirnov test
[b]Scores range from 0-11
* p< .05; ** p < .01; *** p < .001

Social Support

Participants were asked about the number of living parents, siblings, children, and grandchildren and the number of close friends that he or she had. Approximately 70% of participants had living siblings and 40% had living children that they have raised. On average the sample reported having eight close living family members (M = 8.3; SD = 4.42). The majority of respondent reported having between 1 and 2 close living friends (34.8%, n = 1858). A large percentage of the sample reported having no close friends (31.7%, n = 1692). On average, the sample reported having approximately three close friends (M = 8.3; SD = 4.42). Overall, the sample reported having 11 social support persons (M = 11.0; SD = 5.98) with a range between 0 and 55 family and friends.

4.2 Logistic Regression Models

4.2.2 Univariate Logistic Regression

Sociodemographics as Predictors of Social Participation

A series of univariate multinomial logistic regression models were analyzed to determine the association between social participation groups (low, moderate, high) and social demographic variables (sex, age group, marital status, education, employment status, rural status, mother tongue, family status, and income). The low social participation group was the reference category for the outcome variable for all of the models.

Gender. Gender significantly predicted levels of social participation (Table 17). Male was the reference category for the regression model. As gender changed from female to male, the change in odds of being in the moderate social participation

(SP)group, compared to the low SP group, was1.48 (i.e., staying in reference group, rather than being in moderate SP group). Thus, the odds of a male being in the moderate SP group compared to low SP group is 0.67 (= 1/1.48) times more likely. Similarly, as gender changed from female to male, the change in odds of being in the high SP group, compared to the low SP group, is 2.00. Thus, the odds of a male being in the moderate SP group compared to low SP group is 0.5 times more likely. Thus, males were more likely to be in both the moderate and high SP groups (versus to low SP group) compared to females.

Age Group. Age group did not have strong association with levels of participation (Table 17). Age group 60 to 64 years of age was the reference category for the model. As age group changed from 30 to 39 years of age to 60 to 64 years of age, the change in odds of being in the high SP group, compared to the low SP group, was1.54. Thus, individuals between the ages of 60 and 64 were 0.65 times more likely to be in the high SP group (versus low SP group) compared to individuals between the ages of 30 and 39.

Marital Status. Marital status did not significantly predict level of social participation (Table 17).

Table 17: Gender, Age Group, and Marital Status as Univariate Predictors of Social Participation Groups

Variable			*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*)			Odds Ratio
					Lower	Exp(*B*)	Upper	
Moderate Social Participation vs. Low Social Participation	Sex [a]	Female	.392 (0.082)	$22.92_{(1)}$***	1.261	1.48	1.739	0.68
	Age Group [b]	20 to 29	-.141 (0.154)	$.835_{(1)}$	.642	0.87	1.175	1.15
		30 to 39	.106 (0.154)	$.472_{(1)}$	.822	1.11	1.501	0.90
		40 to 49	-.030 (0.132)	$.053_{(1)}$	.750	0.97	1.255	1.03
		50 to 59	-.022 (0.131)	$.029_{(1)}$	.756	0.98	1.265	1.02
	Marital Status [c]	Divorced	-.355 (0.277)	$1.638_{(1)}$	.407	0.70	1.208	1.43
		Married/Common-law	.143 (0.258)	$.305_{(1)}$	.695	1.15	1.913	0.87
		Separated	-.011 (0.334)	$.001_{(1)}$	.514	0.99	1.903	1.01
		Married	-.240 (0.263)	$.833_{(1)}$	.470	0.79	1.317	1.27
High Social Participation vs. Low Social Participation	Sex [a]	Female	.694 (.089)	$60.99_{(1)}$	1.682	2.00	2.382	0.50
	Age Group [b]	20 to 29	.304 (0.164)	$3.46_{(1)}$	.984	1.36	1.869	0.74
		30 to 39	.432 (0.164)	$6.96_{(1)}$**	1.117	1.54	2.123	0.65
		40 to 49	.038 (0.143)	$.072_{(1)}$	.785	1.04	1.376	0.96
		50 to 59	-.050 (0.143)	$.121_{(1)}$	.718	0.95	1.260	1.05
	Marital Status [c]	Divorced	-.389 (0.299)	$1.691_{(1)}$	.377	0.68	1.218	1.47
		Married/Common-law	.170 (0.277)	$.378_{(1)}$	.689	1.19	2.040	0.84
		Separated	.082 (0.357)	$.053_{(1)}$	.539	1.09	2.185	0.92
		Married	-.236 (0.282)	$.700_{(1)}$	.454	0.79	1.373	1.27

[a]Male is the reference category
[b]"60 to 64" is the reference category
[c]Widowed is the reference category
*p< .05; **p< .01; ***p< .001

Education. University education was the reference category for the model. In terms of level of education, participants with university education were less likely to have higher levels of social participation (Table 18). As education levels changed from having less than high school to university education, the change in odds of being in the moderate SP group compared to the low SP group was 0.54. Similarly, the change of odds of being in the high SP group compared to the low SP group was 0.16. Thus people with university education were 1.87 times less likely to be in moderate SP group and 6.90 times less likely to be in high SP group compared to those with a high school education. As education levels changed from having high school to university education, the change in odds of being in the high SP group compared to the low SP group was 0.43. Thus people with university education were 1.89 times less likely to be in high SP group (versus low SP group) compared to those with less than high school education. Similarly, as education levels changed from having a trade certificate or diploma to university education, the change in odds of being in the high SP group compared to the low SP group was 0.38. Thus people with university education were 2.63 times less likely to be in high SP group (versus low SP group) compared to those with less than high school education.

Employment Status.Employment status was significantly related to social participation groups (Table 18). Unemployed was the reference category for the model. As employment status changed from part-time to unemployed, the change in odds of being in the moderate SP group was 2.55 and 4.55 for being in the high SP group (compared to being in the low SP group). Thus, unemployed individuals were 0.39 and 0.22 times more likely to be in the moderate and high SP groups, respectively, compared

to those who were employed part-time. As employment status changed from full-time to unemployed, the change in odds of being in the moderate SP group was 2.83 and 5.26 for being in the high SP group (compared to being in the low SP group). Thus, unemployed individuals were 0.35 and 0.19 times more likely to be in the moderate and high SP groups, respectively, compared to those who were employed full-time. Similarly, as employment status changed from retired to unemployed, the change in odds of being in the moderate SP group was 1.58 and 1.41 for being in the high SP group (compared to being in the low SP group). Thus, unemployed individuals were 0.63 and 0.71 times more likely to be in the moderate and high SP groups, respectively, compared to those with who were retired.

Rural Status. Living in an urban area was the reference category for the model. Rural status did not significantly predict whether one was in the moderate versus the low SP groups, but it did significantly predict being in the high SP group versus low SP group (Table 18). As rural status changed from rural to urban, the change in odds of being in the high SP group, compared to the low SP group, was0.81. Thus, the odds of an individual living in an urban setting of being in the high SP group compared to low SP group was1.23 times more likely.

Mother Tongue.Mother tongue (English, French or Other) was associated with social participation levels (Table 18). "Other" language was the reference category for the model. As mother tongue changed from English to "Other", the change in odds of being in the moderate SP group was 1.49 and 1.97 for being in the high SP group (compared to being in the low SP group). Thus, individuals whose mother tongue was an "other" language were 0.67 and 0.51 times more likely to be in the moderate and high SP

groups, respectively, compared to those who spoke English. Similarly, as mother tongue changed from French to "Other", the change in odds of being in the moderate SP group was 1.47. There was no significant difference of being in the high versus low SP group. Thus, individuals whose mother tongue was "other" were 0.89 times more likely to be in moderate, versus low SP group, compared to those who spoke French.

Family Status. Family status was a significant predictor of social participation levels (Table 19). Non-family persons (single, no children) were the reference category for the model. This family status group was more likely to be in both the moderate and high social participation groups compared to all other family statuses; the exception being the association between children and non-family persons in predicting one being in high versus low SP groups.

Annual Household Income. Annual household income was negatively associated with social participation levels (Table 19). An income level of $80000 was the reference category. Income did not have a strong association with the likelihood of being in the moderate versus the low SP group. Individuals in the lowest income brackets (less than $4999 and between $5000 and $9999) were more likely of being in the moderate versus low SP group compared to individuals with an income of more than $80000. Thus, individuals whose income was $80000 or over were respectively 2.08 and 1.47 times less likely to be in the in the moderate SP groups compared to those in the lowest income brackets. As income increased the change in odds of being in the high SP group also increased. Thus with increasing income individuals were more likely to be in low SP group compared to high SP group: individuals whose income was $80000 or over were 4.76 times less likely to be in the high SP group versus the low SP group compared to

those with an income of less than $4999 and were 1.45 times less likely to be in the high SP group versus the low SP group compared to those with an income of between $60000 and $79999.

Barriers as Predictors of Social Participation

A series of univariate multinominal logistic regression models were analyzed to determine the association between social participation groups (low, moderate, high) and barrier variables (i.e. lack of aids, need for assistance with ADLs, need for additional assistance with ADLs, lack of accessibility features in home, severity of disability as barrier to activity, frequency of disability as barrier to activity, product of disability as barrier to activity, leisure barriers, and stress).

Lack of Aids. Lack of aids significantly predicted level of participation (Table 20). Per one unit increase in lack of aids, the change in the odds of being in low SP group (i.e., staying in reference group, rather than being in the moderate SP group) was 0.861. More intuitively, one was 1.16 (= 1/0.861) times more likely to be the low SP than moderate SP (per one-unit increase in lack of aids). Similarly, per one unit increase in lack of aids, the change in the odds of being in low SP group (rather than being in high SP) was 0.657. Thus, one was 1.52 (= 1/0.657) times more likely to be low SP than high SP group (per one-unit increase in lack of aids). Thus, as lack of aids increased one was slightly less likely to be in the moderate (than the low, or reference group) and even less likely to be in the high SP group (than the low SP group).

Table 18: Education, Employment and Rural Status, and Mother Tongue as Univariate Predictors of Social Participation Groups

Variable			*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*)			Odds Ratio
					Lower	Exp(*B*)	Upper	
Moderate Social Participation vs. Low Social Participation	Education [a]	Less than high school	-.623 (0.179)	$12.074_{(1)***}$	.377	0.54	.762	1.85
		High school	-.235 (0.188)	$1.560_{(1)}$	.547	0.79	1.143	1.27
		Trades	-.314 (0.199)	$2.497_{(1)}$	.495	0.73	1.078	1.37
		College	.137 (0.200)	$.465_{(1)}$	.774	1.15	1.698	0.87
	Employment Status [b]	Part-time	.937 (0.187)	$25.230_{(1)***}$	1.771	2.55	3.678	0.39
		Fulltime	1.039 (0.119)	$76.873_{(1)***}$	2.241	2.83	3.566	0.35
		Retired	.455 (0.096)	$22.461_{(1)***}$	1.306	1.58	1.903	0.63
	Rural Status [c]	Rural	.103 (0.089)	$1.346_{(1)}$	.931	1.11	1.319	0.90
	Mother Tongue [d]	English	.401 (0.126)	$10.117_{(1)***}$	1.166	1.49	1.911	0.67
		French	.387 (0.154)	$6.352_{(1)**}$	1.090	1.47	1.991	0.68
High Social Participation vs. Low Social Participation	Education [a]	Less than high school	-1.933 (0.185)	$108.829_{(1)***}$	.101	0.15	.208	6.67
		High school	-.836 (0.190)	$19.348_{(1)***}$	.299	0.43	.629	2.33
		Trades	-.979 (0.203)	$23.309_{(1)***}$	.252	0.38	.559	2.63
		College	-.227 (0.201)	$1.268_{(1)}$	.537	0.80	1.183	1.25
	Employment Status [b]	Part-time	1.514 (0.193)	$61.788_{(1)***}$	3.116	4.55	6.629	0.22
		Fulltime	1.660 (0.125)	$177.709_{(1)***}$	4.121	5.26	6.715	0.19
		Retired	.345 (0.109)	$9.978_{(1)**}$	1.140	1.41	1.750	0.71
	Rural Status [c]	Rural	-.217 (0.097)	$5.034_{(1)*}$	.665	0.81	.973	1.23
	Mother Tongue [d]	English	.681 (0.141)	$23.221_{(1)***}$	1.498	1.97	2.607	0.51
		French	.114 (0.175)	$.420_{(1)}$	.794	1.12	1.580	0.89

[a]University education is the reference category
[b]Unemployed is the reference category
[c]Urban is the reference category
[d]Other is the reference category
*p< .05; **p< .01; ***p< .001

Table 19: Family Status and Annual Household Income as Univariate Predictors of Social Participation Groups

Variable			*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*)			Odds Ratio
					Lower	Exp(*B*)	Upper	
Moderate Social Participation vs. Low Social Participation	Family Status [a]	Spouses	.434 (0.100)	$18.702_{(1)***}$	1.268	1.54	1.879	0.65
		Common-law partners	.546 (0.166)	$10.778_{(1)***}$	1.246	1.73	2.390	0.58
		Lone parents	.329 (0.165)	$3.973_{(1)***}$	1.005	1.39	1.919	0.72
		Children	.022 (0.136)	$.026_{(1)**}$	.783	1.02	1.334	0.98
	Annual Household Income [b]	Less than $4999	-.731 (0.217)	$11.387_{(1)***}$	.315	0.48	.736	2.08
		$5000 - $9999	-.382 (0.175)	$4.744_{(1)*}$	.484	0.68	.963	1.47
		$10000 - $14999	-.354 (0.186)	$3.607_{(1)}$	.487	0.70	1.011	1.43
		$15000 - $19999	-.264 (0.194)	$1.844_{(1)}$	.525	0.77	1.124	1.30
		$20000 - $29999	-.197 (0.153)	$1.660_{(1)}$	.609	0.82	1.108	1.22
		$30000 - $39999	-.055 (0.153)	$.130_{(1)}$	.701	0.95	1.277	1.05
		$40000 - $49999	-.131 (0.157)	$.696_{(1)}$	.645	0.88	1.193	1.14
		$50000 - $59999	-.009 (0.168)	$.003_{(1)}$	.713	0.99	1.379	1.01
		$60000 - $79999	.060 (0.150)	$.161_{(1)}$	.792	1.06	1.424	0.94
High Social Participation vs. Low Social Participation	Family Status [a]	Spouses	.471 (0.109)	$18.762_{(1)***}$	1.294	1.60	1.982	0.63
		Common-law partners	.653 (0.176)	$13.740_{(1)***}$	1.360	1.92	2.714	0.52
		Lone parents	.389 (0.177)	$4.831_{(1)*}$	1.043	1.48	2.086	0.68
		Children	.048 (0.148)	$.103_{(1)}$	.784	1.05	1.403	0.95
	Annual Household Income [b]	Less than $4999	-1.581 (0.258)	$37.717_{(1)***}$	.124	0.21	.341	4.76
		$5000 - $9999	-1.417 (0.205)	$47.886_{(1)***}$	.162	0.24	.362	4.17
		$10000 - $14999	-.978 (0.204)	$22.901_{(1)***}$	.252	0.38	.561	2.63
		$15000 - $19999	-.815 (0.210)	$15.071_{(1)***}$	.293	0.44	.668	2.27
		$20000 - $29999	-.826 (0.164)	$25.437_{(1)***}$	.317	0.44	.603	2.27
		$30000 - $39999	-.609 (.162)	$14.107_{(1)***}$	.396	0.54	.747	1.85
		$40000 - $49999	-.632 (0.166)	$14.450_{(1)***}$	.384	0.53	.736	1.89
		$50000 - $59999	-.470 (0.177)	$7.016_{(1)**}$	.442	0.63	.885	1.59
		$60000 - $79999	-.373 (0.156)	$5.694_{(1)*}$	.507	0.69	.936	1.45

[a]Non-family persons is the reference category
[b]More than $80000 is reference category
*p< .05; **p< .01; ***p< .001

Need for Assistance with ADLs. Need for assistance with ADLs significantly predicted level of participation (Table 20). Per one unit increase in need for assistance with ADLs, the change in the odds of being in low SP group versus being in the moderate SP group was 0.892. Thus, one was 1.12 times more likely to be low SP than moderate SP (per one-unit increase in need for assistance with ADLs). Similarly, per one unit increase in need for assistance with ADLs, the change in the odds of being in low SP group versus being in high SP was 0.744. Thus, one was 1.34 times more likely to be low SP than high SP group (per one-unit increase in need for assistance with ADLs). Thus, as need for assistance with ADLs increased one was less likely to be in the moderate (compared to low SP group) and even slightly less likely to be in the high SP group (than the low SP group).

Need for Additional Assistance with ADL. Need for additional assistance with ADLs significantly predicted level of participation (Table 20). Per one unit increase in additional need for assistance with ADLs, the change in the odds of being in low SP group versus being in the moderate SP group was 0.842. Thus, one was 1.19 times more likely to be low SP than moderate SP (per one-unit increase in need for additional assistance with ADLs). Similarly, per one unit increase in need for additional assistance with ADLs, the change in the odds of being in low SP group versus being in high SP was 0.783. Thus, one was 1.28 times more likely to be low SP than high SP group (per one-unit increase in need for additional assistance with ADLs). Thus, as additional need for assistance with ADLs increased one was less likely to be in the moderate (compared to low SP group) and even slightly less likely to be in the high SP group (than the low SP group).

Lack of Accessibility Features in the Home. Lack of accessibility features in the home significantly predicted one being in the high SP group compared to the low SP group; lack of accessibility features in the home did not significantly predict being in moderate versus low SP group (Table 20). Per one unit increase in lack of accessibility features in the home, the change in the odds of being in low SP group versus being in high SP was 0.74. Thus, one was 1.34 times more likely to be low SP compared to high SP group (per one-unit increase in lack of accessibility features in the home). Thus, as lack of accessibility features in the home increased one was less likely to be in the high SP group (than the low SP group).

Severity of Disability as a Barrier to Activity. Contrary to what one would expect severity of disability, as a barrier to activity was positively associated with social participation (Table 20). Per one unit increase in severity of disability as barrier to activity, the change in the odds of being in low SP group (rather than being in moderate SP) was 1.05. Thus, one was 0.95 times less likely to be low SP than moderate SP (per one-unit increase in severity of disability as barrier to activity). Similarly, per one unit increase in severity of disability as barrier to activity, the change in the odds of being in low SP group (rather than being in high SP) was 1.49. Thus, one was 0.90 times less likely to be low SP than high SP group (per one-unit increase in severity of disability as barrier to activity). Thus, as severity of disability as barrier to activity increased one was more likely to be in moderate or high (versus low SP group).

Frequency of Disability as a Barrier to Activity. Frequency of disability as a barrier to activity significantly predicted one being in the high SP group compared to the low SP group. However, frequency of disability as a barrier to activity did not

differentiate between being in the low versus moderate SP groups (Table 20). Per one unit increase in frequency of disability as barrier to activity, the change in the odds of being in low SP group versus being in high SP was 0.938. Thus, one is 1.07 times more likely to be low SP compared to high SP group (per one-unit increase in frequency of disability as barrier to activity). Thus, as the frequency of disability as a barrier to activity increased one was more likely to be in the low SP group (than the high SP group).

Total Disability as a Barrier to Activity. Total disability as barrier (frequency x severity) to activity was not a significant predictor of social participation levels (Table 20).

Leisure Barriers. Interestingly leisure barriers was a significant and positive predictor of level of participation (Table 20). Per one unit increase in leisure barriers, the change in the odds of being in low SP group (rather than being in moderate SP) was 1.60. Thus, one was 0.63 times less likely to be low SP group than moderate SP group (per one-unit increase in leisure barriers). Similarly, per one unit increase in leisure barriers, the change in the odds of being in low SP group (rather than being in high SP) was 1.49. Thus, one was 0.67 times less likely to be low SP group than high SP group (per one-unit increase in leisure barriers). Thus, as leisure barriers increased one was more likely to be in moderate or high (versus low SP group).

Stress. Stress significantly predicted level of participation (Table 20). Per one unit increase in stress, the change in the odds of being in low SP group versus being in the moderate SP group was 0.888. Thus, one was 1.13 times more likely to be low SP group than moderate SP group (per one-unit increase in stress). Similarly, per one unit increase in stress, the change in the odds of being in low SP group versus being in high SP group

was 0.827. Thus, one was 1.21 times more likely to be low SP than high SP group (per one-unit increase in stress). Thus, as perceived stress increased one was less likely to be in the moderate group (compared to low SP group) and even slightly less likely to be in the high SP group (than the low SP group).

Facilitators as Predictors of Social Participation

A series of univariate multinominal logistic regression models were analyzed to determine the association between social participation groups (low, moderate, high) and facilitators (use of aids, use of accessibility features in home, assistance with ADLs, social support, self-rated health status, satisfaction with life, and life happiness).

Use of Aids. The model with total number of aids used as predictor was not a significantly better fit to the data compared to without this predictor variable ($\chi^2_{(2)} = 3.46$, $p = .177$) and thus was not a significant predictor of social participation groups (Table 21).

Use of Accessibility Features in the Home. Use of accessibility features significantly predicted level of social participation (Table 21). Per one unit increase in use of accessibility features in the home, the change in the odds of being in low SP group versus being in moderate SP group was 0.934. Thus, one is 1.07 times more likely to be low SP group compared to moderate SP group (per one-unit increase in use of accessibility features in the home). Therefore as the use of accessibility features went up one was more likely to be in the low SP group compared to moderate SP group. Per one unit increase in use of accessibility features in the home, the change in the odds of being in low SP group versus being in high SP group was 0.860. Thus, one is 1.16 times more

Table 20: Barriers as Univariate Predictors of Social Participation Groups

Variable		*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*)			Odds Ratio
				Lower	Exp(*B*)	Upper	
Moderate Social Participation vs. Low Social Participation	Lack of Aids [a]	-.150 (0.058)	$6.809_{(1)}$**	.769	.861	.963	1.16
	Need for Assistance with ADLs [b]	-.114 (0.048)	$5.697_{(1)*}$	.813	.892	.980	1.12
	Need for Additional Assistance with ADLs [c]	-.172 (0.038)	$20.665_{(1)***}$	.782	.842	.907	1.19
	Lack of Accessibility Features in the home [d]	-.122 (0.071)	$2.989_{(1)}$	.771	.885	1.016	1.13
	Severity of Disability as Barrier to Activity [e]	.053 (.014)	$14.100_{(1)***}$	1.026	1.054	1.084	0.95
	Frequency of Disability as Barrier to Activity [f]	-.015 (0.010)	$2.306_{(1)}$	.967	.986	1.004	1.01
	Total Disability as Barrier to Activity [g]	.002 (0.003)	$.341_{(1)}$	.996	1.003	1.008	0.99
	Leisure Barriers [h]	.468 (0.048)	$97.053_{(1)***}$	1.455	1.597	1.753	0.63
	Stress [i]	-.119 (0.055)	$4.668_{(1)*}$	.797	.888	.989	1.13
High Social Participation vs. Low Social Participation	Lack of Aids [a]	-.420 (0.076)	$30.986_{(1)}$***	.566	.657	.762	1.52
	Need for Assistance with ADLs [b]	-.295 (0.057)	$27.046_{(1)}$***	.666	.744	.832	1.34
	Need for Additional Assistance with ADLs [c]	-.244 (0.044)	$31.453_{(1)}$***	.719	.783	.853	1.28
	Lack of Accessibility Features in the home [d]	-.296 (0.091)	$10.664_{(1)***}$	.623	.744	.888	1.34
	Severity of Disability as Barrier to Activity [e]	.105 (0.015)	$49.305_{(1)***}$	1.079	1.111	1.144	0.90
	Frequency of Disability as Barrier to Activity [f]	-.064 (0.010)	$39.518_{(1)***}$	.920	.938	.957	1.07
	Total Disability as Barrier to Activity [g]	.003 (0.003)	$.679_{(1)}$	.996	1.003	1.009	0.99
	Leisure Barriers [h]	.400 (0.049)	$65.525_{(1)}$***	1.354	1.492	1.643	0.67
	Stress [i]	-1.90 (0.057)	$11.080_{(1)}$***	.739	.827	.925	1.21

[a] Scores ranging from 0 to 14 with higher scores indicating greater lack of aids
[b] Scores ranging from 0 to 8 with higher scores indicating more ADLs
[c] Scores ranging from 0 to 8 with higher scores indicating more ADLs
[d] Scores ranging from 0 to 11 with higher scores indicating more features
[e] 1 = "participation not affected"; 4 = "completely unable to participate"
[f] 1 = "never"; 5 = "daily"
[g] Scores ranging from 3 to 60, with higher scores indicating greater barriers to activity due to disability
[h] Scores ranging from 1 to 8 with higher scores indicating greater number of leisure barriers
[I] 1= "Not at all stressful"; 5 = "Extremely stressful"
*p< .05; **p< .01; ***p< .001

likely to be low SP group compared to high SP group (per one-unit increase in use of accessibility features in the home). Therefore as the use of accessibility features in the home increased one was more likely to be in the low SP group versus the high SP group.

Assistance with ADL.Assistance with ADL significantly predicted level of social participation (Table 21). Per one unit increase in assistance with ADLs, the change in the odds of being in low SP group versus being in the moderate SP group was 0.886. Thus, one was 1.13 times more likely to be low SP group than moderate SP group (per one-unit increase in need for assistance with ADLs). Similarly, per one unit increase assistance with ADLs, the change in the odds of being in low SP group versus being in high SP group was 0.787. Thus, one was 1.27 times more likely to be low SP group than high SP group (per one-unit increase in need for assistance with ADLs). So as number of ADLs one gets assistance with goes up one is more likely to be in low group compared to moderate and high SP groups.

Social Support. Social support significantly predicted level of social participation (Table 21). Per one unit increase in social support, the change in the odds of being in low SP group versus being in the moderate SP group was 1.048. Thus, one was 0.95 times more likely to be moderate SP group than the low SP group (per one-unit increase in social support). Similarly, per one unit increase in social support, the change in the odds of being in low SP group versus being in high SP group was 1.059. Thus, one was 0.94 times more likely to be high SP group than low SP group (per one-unit increase in social support). As social support goes up one is less likely to be in low group compared to moderate and high social participation groups.

Self-rated Health Status. Self-rated health status significantly predicted level of

social participation (Table 21). Per one unit increase in self-rated health status, the change in the odds of being in low SP group versus being in the moderate SP group was 1.276. Thus, one was 0.78 times more likely to be moderate SP group than the low SP group (per one-unit increase in self-rated health status). Similarly, per one unit increase in self-rated health status, the change in the odds of being in low SP group versus being in high SP group was 1.907. Thus, one was 0.52 times more likely to be high SP group than low SP group (per one-unit increase in self-rated health status). Therefore as self-rated health status went up one is less likely to be in low group compared to moderate and high social participation groups.

Satisfaction with Life. Satisfaction with life significantly predicted level of social participation (Table 21). Per one unit increase in satisfaction with life, the change in the odds of being in low SP group versus being in the moderate SP group was 1.039. Thus, one was 0.96 times more likely to be moderate SP group than the low SP group (per one-unit increase in satisfaction with life). Similarly, per one unit increase in satisfaction with life, the change in the odds of being in low SP group versus being in high SP group was 1.094. Thus, one was 0.91 times more likely to be high SP group than low SP group (per one-unit increase in satisfaction with life). Thus as satisfaction with life goes up one is less likely to be in low group compared to moderate and high social participation groups.

Life Happiness. Life happiness significantly predicted level of social participation (Table 21). Per one unit increase in life happiness, the change in the odds of being in low SP group versus being in the moderate SP group was 1.389. Thus, one was 0.72 times more likely to be moderate SP group than the low SP group (per one-unit increase in life happiness). Similarly, per one unit increase in in life happiness, the change in the odds of

being in low SP group versus being in high SP group was 2.218. Thus, one was 0.45 times more likely to be high SP group than low SP group (per one-unit increase in life happiness). Therefore as life happiness goes up one is less likely to be in low group compared to moderate and high social participation groups.

4.2.3 Multivariate Logistic Regression

Sociodemographics as Predictors of Social Participation

A multivariate logistic regression model was analyzed with social participation groups (low, moderate, high) as the outcome variable and the following sociodemographics as predictors: sex, education, employment status and annual household income (Table 22). These sociodemographics were selected as predictors as in the univariate logistic regression models they appeared to have the strongest associations with social participation levels. The model with predictors was a significantly better fit to the data compared to without predictors ($\chi^2_{(34)} = 591.901$, $p < .001$). According to the Cox and Snell ($R^2 = .093$) and Nagelkerke ($R^2 = .110$) the effect size of the model was small; however, caution should be made when interpreting these statistics as R^2 tests have less meaning in logistic regression (Field, 2009; Norušis, 2011).

Gender. Being female was negatively associated with being in both the moderate and high SP groups. Male was the reference category for the regression model. As gender changed from female to male, the change in odds of being in the moderate SP group, compared to the low social participation (SP) group, was 1.47. Similarly, as gender changed from female to male, the change in odds of being in the high SP group,

Table 21: Facilitators as Univariate Predictors of Social Participation Groups

Variable		*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*)			Odds Ratio
				Lower	Exp(*B*)	Upper	
Moderate Social Participation vs. Low Social Participation	Use of Aids [a]	.035 (0.023)	$2.316_{(1)}$	.990	1.035	1.083	0.97
	Use of accessibility features in the home [b]	-.068 (0.034)	$3.978_{(1)*}$	.874	.934	.999	1.07
	Assistance with ADLs [c]	-.121 (0.021)	$837.613_{(1)***}$	.850	.886	.923	1.13
	Social Support [d]	.047 (0.010)	$22.280_{(1)***}$	1.028	1.048	1.068	0.95
	Self-rated health status [e]	.243 (0.048)	$25.732_{(1)***}$	1.161	1.276	1.402	0.78
	Satisfaction with Life [f]	.038 (0.007)	$31.654_{(1)***}$	1.025	1.039	1.053	0.96
	Life happiness [g]	.328 (0.048)	$47.015_{(1)***}$	1.264	1.389	1.525	0.72
High Social Participation vs. Low Social Participation	Use of Aids [a]	.013 (0.025)	$.283_{(1)}$	.966	1.013	1.063	1.00
	Use of accessibility features in the home [b]	-.151 (0.039)	$14.875_{(1)***}$	.797	.860	.929	1.16
	Assistance with ADLs [c]	-.240 (0.023)	$104.266_{(1)***}$	.751	.787	.824	1.27
	Social Support [d]	.057 (0.010)	$31.580_{(1)***}$	1.038	1.059	1.081	0.94
	Self-rated health status [e]	.646 (0.051)	$162.268_{(1)***}$	1.727	1.907	2.106	0.52
	Satisfaction with Life [f]	.090 (0.007)	$149.085_{(1)***}$	1.079	1.094	1.110	0.91
	Life happiness [g]	.797 (0.058)	$186.446_{(1)***}$	1.978	2.218	2.487	0.45

[a]Scores ranging from 0 to 20 with higher scores indicating greater use of aids
[b]Scores range from 0-11 with higher scores indicating greater use features
[c]Scores range from 0-8 with higher scores indicating greater assistance
[d]A higher score representing a greater number of family and close friends
[e]1 = "poor"; 5 = "excellent"
[f] 1 ="Very dissatisfied"; 10 = "Very satisfied"
[g]1 = "Happy and interested in life"; 5 = "So unhappy that life is not worthwhile"
*p< .05; **p< .01; ***p< .001

compared to the low SP group, was 2.0. Thus, the odds of a male being in the moderate SP group is 0.68 times more likely and 0.5 times more likely of being in high SP group compared to being in the low SP group. Thus, males are more likely to be in both the moderate and high SP groups (versus to low SP group) compared to females.

Education.In terms of level of education, participants with university education were less likely to have higher levels of social participation. University education was the reference category for the model. As education levels changed from having less than high school to university education, the change in odds of being in the moderate SP group compared to the low SP group was 0.77. Thus people with university education were 1.49 times less likely to be in moderate SP group compared to those with less than high school education. No other education levels significantly predicted whether one was in moderate versus low SP groups. As education levels changed from having less than high school to university education, the change of odds of being in the high SP group compared to the low SP group was 0.24; thus people with university education were 4.17 times less likely to be in the high SP group compared to those with less than high school education. As education levels changed from having high school to university education, the change of odds of being in the high SP group compared to the low SP group was 0.58; thus people with university education were 1.72 times less likely to be in the high SP group compared to those with a high school education. Finally, as education levels changed from having a trade certificate or diploma to university education, the change of odds of being in the high SP group compared to the low SP group was 0.54; thus people with university education were 1.85 times less likely to be in the high SP group compared

to those with a trade certificate or diploma. There was no difference between having college compared to university education.

Employment Status. Employment status was significantly related to social participation groups. Unemployed was the reference category for the model. The change of odds of being in the moderate SP group versus the low SP group as employment status changed from part-time to unemployed was 2.27, from full-time to unemployed was 2.61 and from retired to unemployed was 1.59. The change of odds of being in the high SP group versus the low SP group as employment status changed from part-time to unemployed was 3.45, from full-time to unemployed was 4.07, and from retired to unemployed was 1.43. Thus individuals who were unemployed were 0.44 times more likely than people employed part-time, 0.38 more likely than people employed full-time and 0.63 times more likely than retired individuals to be in moderate SP group, as compared to the low SP group. Similarly, individuals who were unemployed were 0.29 times more likely than people employed part-time, 0.25 more likely than people employed full-time and 0.70 times more likely than retired individuals to be in moderate SP group, as compared to the low SP group. Individuals who were employed part-time, full-time and those who were retried were less likely to be in the moderate or high SP group versus the low SP group compared to individuals who were unemployed.

Annual Household Income. Annual household income was not as strongly associated with social participation levels in the multivariate model as compared to the univariate. An income level of $80000 was the reference category. Only the lowest income brackets differentiated between social participation groups. As income level changed from less than $4999 to more than $80000 the change in odds of being in the

moderate SP group was 0.64 of being in the moderate SP group and 0.38 of being in the high SP group compared to being in the low SP group. As income level changed from between $5000 and $9999 to more than $80000 the change in odds of being in the high SP group was 0.61 compared to being in the low SP group. Thus, individuals with more than $80000 were 1.56 times less likely to be in moderate SP group and 2.63 times less likely to be in high SP group versus low SP group compared to those with an income of less than $4999, and 1.96 times less likely compared to an income of $5000 and $9999 to be in high SP group versus low SP group.

Barriers as Predictors of Social Participation

A multivariate multinominal logistic regression model was analyzed with social participation groups (low, moderate, high) as the outcome variable and the following barriers as predictors: lack of aids, need for assistance with ADLs, need for additional assistance with ADLs, lack of accessibility features in home, severity of disability as barrier to activity, frequency of disability as barrier to activity, leisure barriers, and stress (Table 23). Total disability as barrier to activity was not selected as a predictor as it was not a significant predictor in the univariate logistic regression model. The model with predictors was a significantly better fit to the data compared to without predictors ($\chi^2_{(16)} = 183.29$, $p < .001$). According to the Cox and Snell ($R^2 = .050$) and Nagelkerke ($R^2 = .062$) the effect size of the model was small; however, as previously mentioned, caution should be made when interpreting these statistics as R^2 tests have less meaning in logistic regression (Field, 2009; Norušis, 2011). In terms of main effects in the multivariate multinominal logistic regression model, lack of aids ($\chi^2_{(2)} = 3.63$, *ns*) and need for

additional assistance with ADLs ($\chi^2_{(2)} = 1.05$, *ns*) were not significant predictors of level of social participation. All other barrier variables were significant predictors: needs for assistance with ADLs ($\chi^2_{(2)} = 9.49$, $p < .01$), need for accessibility features in the home ($\chi^2_{(2)} = 7.57$, $p < .05$), severity of disability as barrier to activity ($\chi^2_{(2)} = 47.10$, $p < .001$), frequency of disability as barrier to activity ($\chi^2_{(2)} = 68.05$, $p < .001$), leisure barriers ($\chi^2_{(2)} = 12.17$, $p < .01$), and stress ($\chi^2_{(2)} = 10.08$, $p < .01$).

Need for Assistance with ADL. Need for assistance with ADLs was negatively associated with social participation levels. Per one unit increase in need for assistance with ADLs, the change in the odds of being in low SP group versus being in the moderate SP group was 0.764. Thus, one was 1.31 times more likely to be low SP than moderate SP (per one-unit increase in need for assistance with ADLs). Similarly, per one unit increase in need for assistance with ADLs, the change in the odds of being in low SP group versus being in high SP was 0.739. Thus, one was 1.35 times more likely to be low SP than high SP group (per one-unit increase in need for assistance with ADLs). Thus, as need for assistance with ADLs increased one was less likely to be in the moderate or high SP group compared to low SP group.

Lack of Accessibility Features in the Home. Lack of accessibility features in the home was negatively associated with social participation levels. Per one unit increase in lack of accessibility features in the home, the change in the odds of being in low SP group versus being in moderate SP was 0.775. Thus, one was 1.29 times more likely to be low SP compared to moderate SP group (per one-unit increase in need for accessibility

Table 22: Sociodemographics as Multivariate Predictors of Social Participation Groups

Variable			*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*) Lower	Exp(*B*)	Upper	Odds Ratio
Moderate Social Participation vs. Low Social Participation	Intercept		1.113 (0.198)	$31.592_{(1)}$				
	Sex [a]	Female	.386 (0.084)	$21.087_{(1)***}$	1.248	1.47	1.734	0.68
	Education [b]	Less than high school	-.396 (0.185)	$4.589_{(1)*}$	.468	0.67	.967	1.49
		High school	-.096 (0.191)	$.253_{(1)}$	.624	0.91	1.322	1.10
		Trades	-.153 (0.203)	$.567_{(1)}$	.577	0.86	1.278	1.16
		College	.164 (0.203)	$.651_{(1)}$	.791	1.18	1.753	0.85
	Employment Status [c]	Part-time	.819 (0.188)	$18.936_{(1)***}$	1.568	2.27	3.279	0.44
		Fulltime	.961 (0.122)	$61.696_{(1)***}$	2.056	2.61	3.321	0.38
		Retired	.460 (0.097)	$22.552_{(1)***}$	1.310	1.59	1.916	0.63
	Annual Household Income [d]	Less than $4999	-.442 (0.222)	$3.976_{(1)*}$	.416	0.64	.992	1.56
		$5000 - $9999	-.064 (0.181)	$.126_{(1)}$	.657	0.94	1.338	1.06
		$10000 - $14999	-.090 (0.192)	$.223_{(1)}$	.627	0.91	1.330	1.10
		$15000 - $19999	.015 (0.199)	$.006_{(1)}$	.688	1.02	1.500	0.98
		$20000 - $29999	.035 (0.158)	$.049_{(1)}$	.761	1.04	1.410	0.96
		$30000 - $39999	.120 (0.157)	$.587_{(1)}$	.829	1.13	1.535	0.88
		$40000 - $49999	.054 (0.161)	$.111_{(1)}$	.770	1.06	1.445	0.94
		$50000 - $59999	.139 (0.172)	$.652_{(1)}$	.820	1.15	1.608	0.87
		$60000 - $79999	.115 (0.152)	$.574_{(1)}$	.833	1.12	1.512	0.89

Variable			*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*)			Odds Ratio
					Lower	Exp(*B*)	Upper	
High Social Participation vs. Low Social Participation	Intercept		.929 (0.204)	$20.719_{(1)}$				
	Sex [a]	Female	.694 (0.089)	$60.994_{(1)***}$	1.682	2.00	2.382	0.5
	Education [b]	Less than high school	-1.436 (0.193)	$55.396_{(1)***}$	.163	0.24	.347	4.17
		High school	-.545 (0.195)	$7.759_{(1)**}$	.395	0.58	.851	1.72
		Trades	-.619 (0.209)	$8.743_{(1)**}$	.357	0.54	.812	1.85
		College	-.127 (0.206)	$.381_{(1)}$	.588	0.88	1.319	1.14
	Employment Status [c]	Part-time	1.239 (0.196)	$39.842_{(1)***}$	2.350	3.45	5.074	0.29
		Fulltime	1.404 (0.130)	$116.980_{(1)***}$	3.157	4.07	5.252	0.25
		Retired	.359 (0.112)	$10.257_{(1)***}$	1.149	1.43	1.783	0.70
	Annual Household Income [d]	Less than $4999	-.964 (0.268)	$12.947_{(1)***}$	.226	0.38	.645	2.63
		$5000 - $9999	-.673 (0.215)	$9.821_{(1)**}$	.335	0.51	.777	1.96
		$10000 - $14999	-.367 (0.214)	$2.940_{(1)}$	.455	0.69	1.054	1.45
		$15000 - $19999	-.206 (0.219)	$.885_{(1)}$	.529	0.81	1.250	1.23
		$20000 - $29999	-.323 (0.173)	$3.508_{(1)}$	.516	0.72	1.015	1.39
		$30000 - $39999	-.187 (0.170)	$1.220_{(1)}$	.595	0.83	1.156	1.20
		$40000 - $49999	-.254 (0.174)	$2.147_{(1)}$	.552	0.78	1.090	1.28
		$50000 - $59999	-.161 (0.184)	$.760_{(1)}$	.593	0.85	1.222	1.18
		$60000 - $79999	-.244 (0.162)	$2.270_{(1)}$	.571	0.78	1.076	1.28

[a]Male is the reference category
[b]University education is the reference category
[c]Unemployed is the reference category
[d]More than $80000 is reference category
*p< .05; **p< .01; ***p< .001

features in the home). Per one unit increase in lack of accessibility features in the home, the change in the odds of being in low SP group versus being in high SP was 0.728. Thus, one was 1.37 times more likely to be low SP compared to high SP group (per one-unit increase in lack of accessibility features in home). As lack of accessibility features in the home increased one was less likely to be in the moderate and high SP group compared to the low SP group.

Severity of Disability as Barrier to Activity.Severity of disability as barrier to activity was positively associated with social participation. Per one unit increase in severity of disability as barrier to activity, the change in the odds of being in low SP group (rather than being in moderate SP) was 1.071. Thus, one was 0.93 times less likely to be low SP than moderate SP (per one-unit increase in severity of disability as barrier to activity). Similarly, per one unit increase in severity of disability as barrier to activity, the change in the odds of being in low SP group (rather than being in high SP) was 1.145. Thus, one was 0.87 times less likely to be low SP than high SP group (per one-unit increase in severity of disability as barrier to activity). As severity of disability as barrier to activity increased one was more likely to be in moderate or high SP groups (versus low SP group).

Frequency of Disability as Barrier to Activity.Frequency of disability as barrier to activity was negatively associated with social participation levels. Per one unit increase in frequency of disability as barrier to activity, the change in the odds of being in low SP group versus being in moderate SP was 0.956. Thus, one was 1.05 times more likely to be low SP compared to moderate SP group (per one-unit increase in frequency of disability as barrier to activity). Similarly, per one unit increase in frequency of disability as barrier

to activity, the change in the odds of being in low SP group versus being in high SP was 0.885. Thus, one was 1.13 times more likely to be low SP compared to high SP group (per one-unit increase in frequency of disability as barrier to activity). As frequency of disability as barrier to activity increased one was less likely to be in moderate or high SP group (versus low SP group).

Leisure Barriers. Leisure barriers were positively associated with social participation. Per one unit increase in leisure barriers, the change in the odds of being in low SP group (rather than being in moderate SP) was 1.240. Thus, one was 0.81 times less likely to be low SP than moderate SP (per one-unit increase in leisure barriers). Similarly, per one unit increase in leisure barriers, the change in the odds of being in low SP group (rather than being in high SP) was 1.209. Thus, one was 0.83 times less likely to be low SP than high SP group (per one-unit increase in leisure barriers). As leisure barriers increased one was more likely to be in moderate or high SP groups compared to low SP group.

Stress. Stress significantly predicted level of participation. Per one unit increase in stress, the change in the odds of being in low SP group versus being in the moderate SP group was 0.801. Thus, one was 1.25 times more likely to be low SP than moderate SP (per one-unit increase in stress). Similarly, per one unit increase in stress, the change in the odds of being in low SP group versus being in high SP was 0.786. Thus, one was 1.27 times more likely to be low SP than high SP group (per one-unit increase in stress). As perceived stress increased one was less likely to be in the moderate or high SP groups compared to the low SP group.

Facilitators as Predictors of Social Participation

A multivariate multinominal logistic regression model was analyzed with social participation groups (low, moderate, high) as the outcome variable and the following facilitators as predictors: use of aids, use of accessibility features in home, assistance with ADLs, social support, self-rated health status, satisfaction with life, and life happiness (Table 24). The model with predictors was a significantly better fit to the data compared to without predictors ($\chi^2_{(14)} = 442.344$, $p < .001$). According to the Cox and Snell ($R^2 = .084$) and Nagelkerke ($R^2 = .103$) the effect size of the model was small; however, as previously mentioned, caution should be made when interpreting these statistics as R^2 tests have less meaning in logistic regression (Field, 2009; Norušis, 2011). In terms of main effects in the multivariate mulinominal logistic regression model use of accessibility features in the home ($\chi^2_{(2)} = 4.60$, *ns*) and social support ($\chi^2_{(2)} = .38$, *ns*) were not significant predictors of level of social participation. Although these variables were significant univariate predictors their effects were reduced when other facilitator predictors were considered. All other facilitator variables were significant predictors: use of aids ($\chi^2_{(2)} = 9.48$, $p < .01$), assistance with ADL ($\chi^2_{(2)} = 8.63$, $p < .01$), self-rated health status ($\chi^2_{(2)} = 96.10$, $p < .001$), satisfaction with life ($\chi^2_{(2)} = 30.57$, $p < .001$), and life happiness ($\chi^2_{(2)} = 55.97$, $p < .001$). Interestingly, although use of aids was not a significant univariate predictor this variable was a significant predictor in the multivariate model (when other facilitator predictors were considered).

Use of Aids. Use of aids significantly predicted level of social participation. Per one unit increase in use of aids, the change in the odds of being in low SP group versus

being in the moderate SP group was 1.076. Thus, one was 0.93 times more likely to be moderate SP group than the low SP group (per one-unit increase in use of aids). Similarly, per one unit increase in in use of aids, the change in the odds of being in low SP group versus being in high SP group was 1.035. Thus, one was 0.89 times more likely to be high SP group than low SP group (per one-unit increase in use of aids).As use of aids increased one was more likely to be in the moderate or high SP groups compared to the low SP group.

Assistance with ADL.Assistance with ADL did not significantly predict whether one is more likely to be in low compared to moderate SP group. However it was significant in predicting that whether one was in the low SP group compared to the high group. Per one unit increase in assistance with ADL the change in odds of being in the low group versus being in the high group was .918. Thus one was 1.09 times less likely to be in the low versus high social participation group (per one unit increase in use of aids).

Self-rated Health Status. Self-rated health status significantly predicted levels of social participation. Per one unit increase in self-rated health status the change in odds of being in the low group versus the high group was 1.232. Thus one was 0.81 times more likely to be in the low versus high social participation group (per one unit increase in self-rated health status). Similarly, per one unit increase in self-rated health status, the change in the odds of being in low SP group versus being in high SP group was 1.631. Thus, one

Table 23: Barriers as Multivariate Predictors of Social Participation Groups

Variable		*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*) Lower	Exp(*B*)	Upper	Odds Ratio
Moderate Social Participation vs. Low Social Participation	Intercept	3.080 (0.374)	67.894				
	Lack of Aids [a]	-.004 (0.108)	$0.001_{(1)}$	.806	.996	1.231	1.00
	Need for Assistance with ADLs [b]	-.269 (0.089)	$9.263_{(1)**}$	.642	.764	.909	1.31
	Need for Additional Assistance with ADLs [c]	-.068 (0.066)	$1.063_{(1)}$	.820	.934	1.063	1.07
	Lack of Accessibility Features in the home [d]	-.255 (0.096)	$7.042_{(1)**}$	.641	.775	.935	1.29
	Severity of Disability as Barrier to Activity [e]	.068 (0.025)	$7.665_{(1)**}$	1.020	1.071	1.124	0.93
	Frequency of Disability as Barrier to Activity [f]	-.045 (0.022)	$4.313_{(1)*}$	.917	.956	.997	1.05
	Leisure Barriers [g]	.215 (0.065)	$10.985_{(1)***}$	1.092	1.240	1.408	0.81
	Stress [h]	-.221 (0.075)	$8.778_{(1)**}$	.692	.801	.928	1.25
High Social Participation vs. Low Social Participation	Intercept	2.975 (0.385)	59.666				
	Lack of Aids [a]	-.137 (0.121)	$1.291_{(1)}$	.688	.872	1.105	1.15
	Need for Assistance with ADLs [b]	-.302 (0.098)	$9.399_{(1)**}$	.610	.739	.897	1.35
	Need for Additional Assistance with ADLs [c]	-.056 (0.071)	$.615_{(1)}$	.823	.946	1.087	1.06
	Lack of Accessibility Features in the home [d]	-.318 (0.117)	$7.310_{(1)**}$	.578	.728	.916	1.37
	Severity of Disability as Barrier to Activity [e]	.135 (0.026)	$27.719_{(1)***}$	1.088	1.145	1.204	0.87
	Frequency of Disability as Barrier to Activity [f]	-.123 (0.022)	$30.119_{(1)***}$	.847	.885	.924	1.13
	Leisure Barriers [g]	.190 (0.068)	$7.781_{(1)**}$	1.058	1.209	1.382	0.83
	Stress [h]	-.240 (0.078)	$9.518_{(1)**}$	.675	.786	.916	1.27

[a] Scores ranging from 0 to 14 with higher scores indicating greater use of aids
[b] Scores ranging from 0 to 8 with higher scores indicating more ADLs
[c] Scores ranging from 0 to 8 with higher scores indicating more ADLs
[d] Scores ranging from 0 to 11 with higher scores indicating more features
[e] 1 = “participation not affected”; 4 = “completely unable to participate”
[f] 1 = “never”; 5 = “daily”
[g] Scores ranging from 1 to 8 with higher scores indicating greater number of leisure barriers
[h] 1= "Not at all stressful"; 5 = "Extremely stressful”
*p< .05; **p< .01; ***p< .001

was 0.61 times more likely to be high SP group than low SP group (per one-unit increase in self-rated health status). Therefore as self-rated health status increased one is less likely to be in low group compared to moderate and high social participation groups.

Satisfaction with Life. Satisfaction with life was not significant in predicting low versus moderate social participation groups. However it was significant in predicting that one is less likely to be in the low social participation group compared to high group. Per one unit increase in satisfaction with life, the change in odds of being in the low group versus being in the high group was 1.038. Thus one was 0.96 times more likely to be in the high versus low social participation group (per one unit increase in use of aids).

Life Happiness. Life happiness significantly predicted level of social participation. Per one unit increase in life happiness the change in odds of being in the low group versus being in the high group was 1.303. Thus one was 0.77 times more likely to be in the low versus high social participation group (per one unit increase in life happiness). Similarly, per one unit increase in life happiness, the change in the odds of being in low SP group versus being in high SP group was 1.461. Thus, one was 0.59 times more likely to be high SP group than low SP group (per one-unit increase in life happiness). Therefore as life happiness increased one was less likely to be in low group compared to moderate and high social participation groups.

Table 24: Facilitators as Multivariate Predictors of Social Participation Groups

Variable		*B* (*SE*)	Wald $\chi^2_{(df)}$	95% CI for Exp(*B*)			Odds Ratio
				Lower	Exp(*B*)	Upper	
Moderate Social Participation vs. Low Social Participation	Intercept	.187 (0.299)	$.392_{(1)}$				
	Use of Aids [a]	.073 (0.038)	$3.783_{(1)*}$	.999	1.076	1.158	0.93
	Use of accessibility features in home [b]	-.021 (0.050)	$.176_{(1)}$	.888	.979	1.080	1.02
	Assistance with ADLs [c]	-.032 (0.036)	.786	.903	.969	1.039	1.03
	Social Support [d]	.007 (0.011)	$.366_{(1)}$	.985	1.007	1.029	1.00
	Self-rated health status [e]	.209 (0.069)	$9.136_{(1)**}$	1.076	1.232	1.410	0.81
	Satisfaction with Life [f]	.013 (0.009)	$2.372_{(1)}$	.996	1.013	1.031	1.00
	Life happiness [g]	.265 (0.064)	$16.921_{(1)***}$	1.149	1.303	1.478	0.77
High Social Participation vs. Low Social Participation	Intercept	-3.114 (0.349)	$79.411_{(1)***}$				
	Use of Aids [a]	.112 (0.040)	$7.983_{(1)**}$	1.035	1.119	1.209	0.89
	Use of accessibility features in home [b]	-.081 (0.055)	$2.173_{(1)}$	.829	.923	1.027	1.08
	Assistance with ADLs [c]	-.085 (0.039)	$4.920_{(1)*}$	.851	.918	.990	1.09
	Social Support [d]	.007 (0.012)	$.344_{(1)}$	.984	1.007	1.030	1.00
	Self-rated health status [e]	.489 (0.072)	$46.421_{(1)***}$	1.417	1.631	1.877	0.61
	Satisfaction with Life [f]	.037 (0.009)	$16.417_{(1)***}$	1.020	1.038	1.057	0.96
	Life happiness [g]	.525 (0.074)	$49.973_{(1)***}$	1.461	1.690	1.955	0.59

[a]Scores ranging from 0 to 20 with higher scores indicating greater use of aids
[b]Scores range from 0-11 with higher scores indicating greater use features
[c]Scores range from 0-8 with higher scores indicating greater assistance
[d]A higher score representing a greater number of family and close friends
[e]1 = "poor"; 5 = "excellent"
[f] 1 ="Very dissatisfied"; 10 = "Very satisfied"
[g]1 = "Happy and interested in life"; 5 = "So unhappy that life is not worthwhile"
*p< .05; **p< .01; ***p< .001

CHAPTER 5: DISCUSSION AND CONCLUSION

The purpose of this study was to identify the personal and environmental factors that were the most influential barriers and facilitators to social participation among adults (ages 20-64) with mobility disabilities. In this chapter the results on the personal and environmental factors will be discussed. The strengths and limitations of the study, and future recommendations for practitioners and researchers will also be presented.

5.1 Social Participation

In this study the list of social participation activities were separated into in home and out of home activities. For in home activities, the sample reported watching/listening to TV, videos, radio, and CDs most often (everyday). Out of home activities were rarely reported compared to in home activities. This suggests that out of home activities may have greater barriers for this population due to mobility and transportation access. On average, engagement in social participation was moderately low (15.3/28). This is unfortunate as social participation is a critical factor in maintaining health and well-being as an individual ages (Abraham, 2012; Hoglund, 2009; Holmes, 2011; Janke, 2012; and Lee et al., 2008). It is important for creating a sense of belonging, social networks, and life balance for individuals who might otherwise have no means of involvement in their community or society (Statistics Canada, 2003; WHO, 2001). Thus, it is critical to examine the barriers and facilitators of social participation in this population in order to determine ways of increasing social and leisure participation among individuals with mobility disabilities. This study explored sociodemographics, barriers and facilitators as

predictors of social participation levels. Social participation among individuals with mobility disabilities has not been extensively researched, and therefore the field lacks knowledge of the best approaches to reducing barriers and preventing further restriction of social participation.

5.2 Sociodemographics and Social Participation

Sociodemographics were analyzed in this study because they are personal contextual factors that can give background into an individual's life. The ICF model, used as a framework in this study, recognizes that these personal factors may affect an individual's disability, but are not classified in the model due to large variance present in culture and society. However they are important to explore as these variables may potentially facilitate or hinder social participation in a population with mobility disabilities.

In the current sample, 59% of individuals are married or common-law. Marital status was not a significant predictor of social participation levels. Marital status has been found to be a predictor of social participation among many other populations (Jackson, 1988; McCarville & Smale, 1993). Previous research has shown mixed results with respect to whether or not marital status is a significant predictor of social participation. Janke et al. (2008) found that widows (62% of the sample) had significantly reduced levels of participation and overall frequency of engagement. The current sample only had 28% that reported being widowed or single. As well previous findings have indicated that as one takes on more activities, an individual who is married will continue participating in the increased number of activities compared to individuals

who are not married (Strain, Grabusic, Searle, & Dunn, 2001). In other research, being married was found to be more of a constraint toward social and leisure participation (Alexandris & Carroll, 1997). Married individuals may have more constraints due to more time commitments. Discrepancy in research findings on marital status may show that this factor is really not an important predictor of social participation. It really comes down to the individual and their condition and motivation for pursuing activities.

Males were more likely to be in moderate and high social participation groups (low social participation (scores ranging from 0-9), moderate social participation (scores ranging from 10-18), and high social participation (scores ranging from 19-28)) compared to females. These results were found in both univariate and multivariate regressions. My results are consistent with previous research; males are more involved in social groups and have higher participation levels (Lantz et al., 2012;Avlund et al., 2000; Statistics Canada, 2003). This may be because women have less discretionary time due to social roles (Antonucci, 1990; Patrick et al., 1986; Stone, et al., 1987) and reduced leisure ethic.

Rural status was a not strong predictor of social participation. However, individuals who lived in urban settings were more likely to be in the high social participation group. Individuals living in urban settings may likely have more opportunity and access to social participation activities compared to those individuals who live in rural settings. There has been very little research examining social participation patterns among rural versus urban residents. Most of the previous research has been on physical activity related to leisure activities. My results are consistent with this research in that rural individuals have lower participation levels (Wilcox, Castro, Housemann, & Brownson, 2000; Parks, Housemann, & Brownson, 2003). Among

adolescents in rural versus urban areas in relation to social participation no difference was found (Sjolie & Thuen, 2002), this was due to the respondents only participating in sedentary activities.

In this study mother tongue was broken into categories of English, French, and Other. Participants in "other" were more likely to be in the moderate and high social participation groups compared to those who spoke English or French. This seems unusual as not speaking one of the national languages as your mother tongue could cause barriers in communication and thus be a barrier to participation. Individuals whose mother tongue was not English or French (e.g., immigrants or second-generation Canadians) may have been putting forth greater effort to be involved in social and leisure activities and/or there may be more services or community support for these individuals (e.g., greater sense of community among a cultural or religious group), thus providing greater opportunities for social participation. There is a need for further research in the area of mother tongue and the affect it may have on social participation. Considering individuals who did not speak English or French as their mother tongue were morel likely to be in higher participation groups, this could be due to the fact that they are well adjusted in society and learned one or both national languages; making it easier for communication. The representation of the "other" group in this study was low compared to English and French, also pointing out that those individuals who may not have been able to speak any English or French thus did not participate at all.

Family status was a significant predictor of social participation levels in this study. Non-family persons (i.e., those without children and single) were more likely to be in moderate and high social participation groups than any other family status groups.

This could be due to having more time for social activities due to fewer family commitments. Previous research by Alexandris and Carroll (1997) states that married individuals were significantly more constrained than single persons on time-related constraints (e.g having children and obligations).

Several of the sociodemographic variables (i.e., age, education, employment status, and income) predicted social participation in the opposing direction from what is found in the literature. Age was only significant in predicting associations with levels of social participation in the age group 60-64. This group was 0.65 times more likely to be in the high social participation category compared to those in the age group 30-39. This could be due to the fact that those individuals 60-64 may be retired, are approaching older adulthood, and have more time for social and leisure activities than those in the younger middle-aged group. It is important to note that no age group was a high predictor of social participation. These results are in contrast to previous research. Statistics Canada (2004) reported that adults 65 and older had the lowest amount of social participation among all age groups. Generally, research has found that there is a negative relationship between activity and age (e.g., Agahi, Ahacic, & Parker, 2006) meaning that social participation levels decrease as one ages. However, the results of this study suggest that increased age is not a significant predictor of social participation in those with mobility disabilities. Research found that the number of adults who start a new activity steadily decreases over successive adult aged cohorts (Iso-Ahola, Jackson, & Dunn, 1994). This suggests that educating and getting adults involved in more social participation at a younger age may reduce the chances of decreased social participation as one ages. Encouraging government and other agencies to increase advocacy for young and middle-

aged adults on ways to stay actively participating while aging is important in the maintenance of independence as one ages.

Interestingly in this study education was a factor in predicting social participation levels. This finding contradicts other literature in the area which has found that lower education levels are associated with lower levels of social participation among people with mobility disability (Barf et al., 2009; Clarke et al., 2009; Mcllvane, 2007). In contrast this study found that individuals with lower education levels (i.e., less than high school, high school, and trades and certificates) were more likely to have higher social participation levels than those with college and university education. This was evident in both univariate and multivariate regressions. There was no difference in having a college degree in comparison to a university degree. This could be linked with employment status in that those with higher education may be more likely to be employed and thus have less available time for social participation due to work and family obligations. Research generally suggests that employed individuals have greater levels of social participation (Kikuchi, Mifune, Niino, Ohbu, Kira, Kohriyama, & Kikuchi, 2011; Mcllvane et al., 2007; Nilsson et al., 2010; Park et al., 2007). However, the current study found that individuals with mobility disabilities who were unemployed were more likely to have greater social participation levels compared to those who were employed (i.e., part- or full-time or retired). Employment status was significantly related to social participation groups in both univariate and multivariate regressions. This could be due to the fact that these individuals may have more discretionary time for social and leisure activities. Thus, the present findings for education and employment go against previous literature on predictors of social participation; this may be due to the list of social

participation activities that were asked of respondents, which included many activities that take place inside the home. This sample was more highly involved with in home activities. Therefore those individuals not working or who were less educated may not be leaving their homes as often as those who were employed or more educated. Also the list of out of home activities that were asked of respondents may be highly related to education or employment status as they consisted of activities such as visiting friends and family and going to cultural/sporting events; activities that are commonly participated regardless of socioeconomic status.

In this sample annual household income was negatively associated with social participation levels. Individuals in the lowest income brackets (i.e., less than $4999 and between $5000 and $9999) were more likely to be in the moderate versus low social participation group compared to individuals with an income of more than $80,000. As income increased the change in odds of being in the high social participation group also increased. Those whose income was $80,000 were almost 5 times less likely to be in the high social participation group compared to the low group. This was evident in both the univariate and multivariate regressions. These findings are not consistent with other literature on lower-economic status. Previous studies have found that lower social economic status has a negative effect on social participation (Kikuchi et al., 2011; Nilsson et al., 2010) as well as decreased well-being (Kikuchi et al., 2011; Mcllvane et al., 2007). This might be due to available time for individuals, if those with greater income are fully employed working longer hours they have decreased time and endurance to participate socially.

5.3 Personal Factors and Social Participation

Personal factors are features of an individual's life that are not part of the health condition. They are contextual factors in the ICF model and were analyzed to see their interaction with the mobility disability condition and social participation. The following is a discussion of the personal factors analyzed in the study, and their significance toward social participation.

In the current study the use of aids by individuals was low. Most of the aids that were used were for pain (i.e., hot/cold aids and comfort aids). Use of aids may have been low due to the person-device fit. Brummel-Smith & Dangiolo (2009) discusses how devices can be at risk of not being used if they are not correctly prescribed, the patient is poorly trained in their use, or the patient does not desire them (possible due to stigma attached to using the aid). Dependency has a negative stereotype in our society; this could especially apply to this sample as they were young and middle-aged adults and having a stigma of being unable to perform certain tasks or being associated with having a disability could be distressing to one's personal/self- image (Resnivk, Allen, Isenstadt, Wasserman, & Iezzoni, 2009). Despite the relatively low use of aids by participants, this factor was only found to be a significant predictor of social participation when other facilitator predictors were considered (i.e., significant in the multivariate but not in the univariate logistic regression models). Use of aids was in fact one of the strongest facilitator predictors of social participation in the multivariate models. This might suggest an interaction effect with other facilitator variables. As use of aids increased one was more likely to be in the moderate or high social participation groups compared to the

low social participation group. There is limited research on use of aids or assistive devices in increasing social participation levels among people with disabilities. In other areas of research using assisted equipment in the home for maintenance has been found to be highly effective in maintaining independence (e.g., Agree, 1999). Further research is needed on the relation of aids use and social participation levels.

The sample not only used aids infrequently, but most of this sample did not indicate that they lacked aids; only approximately 10% indicated that they needed a mobility aid and did not currently have one. This could be due to the lack of variety of aids asked about on the survey or that the severity of mobility disability of the sample was not high enough to warrant the use of aids. Not requiring aids, and low level of use of aids, could also indicate that individuals are not aware or informed about the availability of mobility aids. Individuals may have a lack of information on accessible products and devices; even being educated on small household items (e.g., small foam curlers that can be used on toothbrushes or pencils for better grip) that can be used as facilitators in other activity areas could reduce activity barriers (Blake & Bodine, 2002). Although the sample indicated not needing aids, lack of aids was a significant predictor of social participation. This is consist with other research that states that having the support of aids increases performance of physical and social activities and ADLs (Edwards & Jones, 1998; Ripat & Woodgate, 2012; Scherer & Glueckauf, 2005; Woolf, Erwin, & March, 2012; Wu, Ma, & Chang, 2009).

Health and well-being facilitator variables (i.e., self-rated health, satisfaction with life, and life happiness) were not strong predictors of social participation. This sample

rated their health mostly as fair to good. Health status is a hard variable to rate when one has a disability, as it is unknown whether the individual is rating their health with their disability included or besides the fact that they have a certain disability. As self-rated health status increased one was more likely to be in the moderate or high social participation groups compared to the low. Although this makes sense, it was not a strong predictor of social participation. Other research confirms (Gilmore, 2012; Hyyppa et al., 2003; Puumalainen, 2011) that higher participation involvement and good self-rated health are correlated. Previous research has presented that lower engagement in social activities has been associated with less life satisfaction (Dijkers, 1997; Lantz et al., 2012; & Kinney, 1992). In this study, satisfaction with life was measured within four domains: social, health, job, and leisure. Participants rated being most satisfied with their friends and family and least satisfied with their health. It was also not a significant predictor of social participation when other variables were considered and only slightly significant on its own. On average the sample was happy with their life. As life happiness went up one was less likely to be in the low social participation group compared to the moderate and high groups; however life happiness was not a strong predictor of social participation. This differs from previous research findings that life happiness/life satisfaction are important factors in predicting higher levels of social participation (Anaby et al., 2011; Lantz et al., 2012; Kinney, 1992; Mollaoglu et al., 2010; Poulin, 2009; Levasseur, 2010, Noreau, 2004). The difference in findings may be due to severity, since most of the sample was happy/satisfied they may not being facing as many personal health issues and therefore may have the opportunity to participate.

Stress was significantly related to social participation levels and was in fact one of the strongest predictors among the personal barriers. As perceived stress increased one was less likely to be in the moderate (univariate and multivariate models) or high (univariate model) social participation groups. The sample in the current study perceived being slightly stressed on most days. This stress was mainly caused by health-related issues. These findings show that as one has more stress (likely due to their health condition) one is less likely to participate in social and leisure activities. As social participation is an important component of QOL (Lee et al., 2008) the participants in this study with higher stress, and therefore lower social participation, are at risk of decreased health and well-being. Additionally, social participation can reduce or buffer stress, thus moderating the negative effect of stress on health and well-being. The Leisure and Health Buffer Model (Coleman & Iso-Ahola, 1993) states that leisure impacts health by providing buffering mechanisms (i.e., social support and self-determination) when a life stress/problems arise. These buffers act by reinforcing social support (e.g., developing companionship/friendships) and self-determination (e.g., belief in ability to control good and bad things/coping capacity), therefore contributing to greater health.

5.4 Environmental Factors and Social Participation

Environmental factors are those, which are extrinsic to the individual. The ICF model incorporates these as contextual factors that interact with the individuals' health condition, which in turns determines their level of functioning. The following is a discussion of the environmental factors analyzed in this study and their significance toward levels of social participation.

Getting assistance with ADLs was conceptualized as an environmental facilitator (getting help); needing additional or any help was conceptualized as an environmental barrier. However, total number of ADLs that people received help for was negatively associated with social participation. The more assistance individuals needed the lower their social participation score. Thus, number of ADLs is more of an indicator of severity of barrier than a facilitator to social participation. Severity of mobility disabilities were found to be significantly related to residual difficulties. Individuals who used equipment or aids reported less difficulties and lower degree of severity compared to those individuals who relied on personal assistance alone or with the use of equipment. Therefore individuals who needed personal assistance had a higher degree residual difficulties and greater severity (Agree, 1999).

Among respondents in this study the majority were independently able to complete ADLs or received enough assistance with ADLs. This can be related to the severity of disability of the sample, as 81% rated their disabilities as less severe. Over half of respondents received assistance with heavy chores (58.7%) and over a third of the sample received help with housework (32.9%) and going to appointments/shopping (37.2%). These tasks are mostly physically demanding or require travel. More assistance with these ADLs indicates decreased strength and endurance; naturally these tasks are often the first to diminish (Lantz et al., 2012). Few respondents received assistance with medical care at home or for moving around inside the home. Need for assistance and need for additional assistance with ADLs were both strong predictors of social participation levels in the univariate results. The more ADLs that one indicated they needed additional assistance with or assistance with, the more likely the individuals

were to be in the low social participation group compared to moderate or high. This is likely due to assistance with ADLs being an indicator of severity of the disability or possibly due to lack of time, as without help regular personal and household activities may be lengthy and tiring, thus reducing available time for discretionary social and leisure activities. Ekstrom et al. (2013) confirmed the benefits of having help for ADLs in maintaining social participation and an active lifestyle. Neither need for additional assistance nor need for assistance with ADLs were significant in predicting social participation levels when other factors were considered (i.e., were not significant predictor in multivariate model).

In this sample very few people used accessibility features; only 8% (n = 461) of the sample stated that they used such features to enter and leave their residence. Grab bars, ramps and street level entrances were the most frequently used features among the sample. Use of accessibility features (although conceptualized as a facilitator) is more of an indicator of severity of disability. The list given for choices of accessibility features was directed to those individuals with severe limitations (e.g., elevators, lifts), thus with 80% of this sample having milder limitations, the list of features in the survey might not have been appropriate for individuals with less severe disability conditions. Despite the small number of individuals who used accessibility features, this variable was a high predictor of social participation. As fewer features were used, the more likely an individual was to be in the moderate or high social participation group. Although significant in univariate regression, use of accessibility features was not significant in multivariate regression analysis.

Participants also indicated that they did not lack accessibility features in their homes, yet this variable was a strong predictor of social participation levels. Individuals who did need accessibility features indicated needing "other" features most frequently. This may tell us that the list of accessibility features was not comprehensive and lacked variety. It is important to note that individuals seemed to not need further features yet it prevented them from higher social participation levels. One could speculate on the possibility that respondents were unaware of certain features that might benefit their condition therefore making mobility and activities easier for them to participate in (either within the home or leaving and entering the home to participate in out of home activities).

In this study social support was measured by the quantity of close friends and family the respondents had. Overall the sample reported having an average of 11 social support persons. As the number of social supports an individual had went up, the likelihood of them being in the moderate or high social participation groups increased. However, social support was not a strong univariate predictor and when other facilitator variables were considered in the multivariate regression social support was not found to be significant. Other research on social support states that individuals with no or lower social support are at risk for: higher mortality rates (Hoglund et al., 2009), higher chance of decreased QOL (Lantz et al., 2012), decreased active/independent life for older adults with mobility disabilities (Gilmour et al., 2012), and decreased perceptions of /and usefulness to family and friends (Gruenewald, Karlamangla, Greendale, Singer, & Seeman, 2007).

Participants in this study rated their frequency and severity in mobility, agility, and pain in correspondence with difficulties in joining or participating in social activities.

On average, individuals reported that mobility, agility and pain disabilities were barriers to participate in activities on a weekly basis and that these barriers presented a lot of difficulty to activity participation. As the frequency of disability increased one was more likely to be in the low social participation group compared to moderate or high. Frequency of barriers has been found to be a significant predictor of social participation among people with disabilities (Barf et al., 2009; Loucks-Atkinson & Mannell, 2007). However, as severity of disability as barrier to activity increased one was more likely to be in moderate or high compared to the low social participation group. This is in contrast to previous research, which suggests that increased disability is associated with lower levels of social participations (Barf et al., 2009; Gray, Hollingsworth, Stark, Morgan, 2006; Zachariae et al., 2002). Disability as barrier to activity was not a strong predictor of social participation. This may be due to the severity of disabilities in this sample. As the majority of the sample had less severe limitations, they may not view their disability itself as a sole factor that prevents them from participating in activities. They may look at their situation more complexly, as what factors hinder and aid their ability to participate in activities. Respondents were also asked what barriers inhibited them most frequently from participating in leisure barriers. The sample reported most frequently that their disability condition (46%) was the greatest barrier, followed by the expense (17%), and "other" (13%). Overall these participants did not have high leisure barriers, even less so if disability condition is not considered. These results can suggest that the only possible way to increase social participation is to reduce the disability caused by the condition of the individual. There could be a threshold effect in that lower levels of barriers to activity do not effect participation but significantly influence participation once a certain level of

barrier is experienced. Once an individual experiences too many barriers it may be very difficult to negotiate or overcome the barriers to participation. Interestingly leisure barrier was positively associated with levels of social participation; the more the barriers increased the more likely individuals were to be in the moderate or high social participation groups compared to the low (in both univariate and multivariate regressions). A constraint has been defined as anything that inhibits or reduces an individual's leisure participation and satisfaction (Jackson, 1988). Constraints or barriers often were thought to be insurmountable. However, researchers found evidence of the existence of a constraints negotiation process (e.g., Jackson & Rucks, 1995; Kay & Jackson, 1991; Scott, 1991; Shaw, Bonen, & McCabe, 1991) that challenged the assumption that leisure barriers automatically lead to non-participation or reduced participation. Jackson, Crawford, and Godbey's (1993) constraint negotiation theory states that participation is not dependent on lack of barriers but rather the ability to negotiate these barriers. Hence, constraints negotiation is the process of actively responding to encountering barriers through the use of personal and social resources. Therefore, in this study it appears that leisure barriers did not prevent social participation and thus individuals may have had success negotiating barriers. Further research is needed to explore the personal and social resources that individuals with mobility disabilities use to overcome constraints to social participation.

5.5 Strength and Source of Predictors To Social Participation

This study sought to determine what barriers and facilitators are associated with social participation among adults with mobility disabilities and whether these factors

were personal or environmental in nature. Nine sociodemographics were examined as personal factors effecting social participation levels. Marital status was an insignificant predictor of social participation. Age group had a fairly low and non-significant odds ratios (with the exception of ages 30 to 39 when comparing high versus low social participation with ages 60-64). Education and income had very low odds ratios (ranging from 0.15 to 0.80 and 0.12 and 0.79 respectively). Rural status was also not a strong predictor (Moderate Social Participation (SP) vs. Low SP: Odds Ratio (OR) = 1.11; High SP vs. Low SP: OR = 0.81). The strongest sociodemographic predictors included family status (ORs ranging from 1.05 to 1.92), mother tongue (ORs ranging from 1.12 to 1.97), and sex (Moderate SP vs. Low SP: OR = 1.48; High SP vs. Low SP: OR = 2.00). Employment status was the strongest sociodemographic (personal factor) variable in predicting social participation (ORs ranging from 1.41 to 5.26).

Among the nine conceptualized barriers (five personal and four environmental factors) to social participation, none of the univariate odds ratios were very high (ranging from 0.63 to 1.52). Leisure barriers (environmental factor) had the smallest odds ratio (Moderate SP vs. Low SP: OR = 0.63; High SP vs. Low SP: OR = 0.67), followed by severity of disability as barrier to activity (personal factor; Moderate SP vs. Low Social Participation: OR = 0.95; High SP vs. Low SP: OR = 0.90), total disability as barrier to activity (this personal factor was not statistically significant; Moderate SP vs. Low Social Participation: OR = 1.00; High SP vs. Low SP: OR = 1.00) and frequency of disability as barrier to activity (personal factor; Moderate SP vs. Low SP: OR = 1.01; High SP vs. Low SP: OR = 1.07). The remaining five barrier predictors (lack of aids, need for assistance with ADLs, need for additional assistance with ADLs, lack of accessibility

features in the home, and stress) all had slightly higher odds ratios for distinguishing between high social participation versus low social participation compared to moderate social participation versus low social participation. Additionally, all of the odds ratios for these variables were higher when comparing high versus low social participation. Stress (personal factor) was the next strongest barrier predictor (Moderate SP vs. Low SP: OR = 1.13; High SP vs. Low SP: OR = 1.21), followed by need for assistance with ADLs (environmental factor; Moderate SP vs. Low SP: OR = 1.12; High SP vs. Low SP: OR = 1.34), lack of accessibility features in the home (environmental factor; Moderate SP vs. Low SP: OR = 1.13; High SP vs. Low SP: OR = 1.34), need for additional assistance with ADLs (environmental factor; Moderate SP vs. Low SP: OR = 1.28; High SP vs. Low SP: OR = 1.28), and lack of aids (personal factor; Moderate SP vs. Low SP: OR = 1.16; High SP vs. Low SP: OR = 1.52). There was not a clear trend as to whether personal or environmental factors were the strongest barriers to social participation. Lack of aids, a personal factor, was the strongest barrier to social participation and three environmental barriers (need for assistance with ADLs, need for additional assistance with ADLs, and lack of accessibility features in the home) were among the strongest barrier predictors.

Among the seven conceptualized facilitators (four personal and three environmental factors) to social participation, none of the univariate odds ratios were very high (ranging from 0.45 to 1.27). Life happiness (personal factor) had the smallest odds ratios (Moderate SP vs. Low SP: OR = 0.45; High SP vs. Low SP: OR = 0.72), followed by self-rated health status (personal factor; Moderate SP vs. Low SP: OR = 0.78; High SP vs. Low SP: OR = 0.52), satisfaction with life (personal factor; Moderate SP vs. Low SP: OR = 0.96; High SP vs. Low SP: OR = 0.91), and social support (environmental factor;

Moderate SP vs. Low SP: OR = 0.95; High SP vs. Low SP: OR = 0.94). The facilitator predictors with the highest odds ratios included use of aids (personal factor; Moderate SP vs. Low SP: OR = 0.97; High SP vs. Low SP: OR = 1.00), use of accessibility features in the home (environmental factor; Moderate SP vs. Low SP: OR = 1.07; High SP vs. Low SP: OR = 1.16), and assistance with ADLs (environmental factor; Moderate SP vs. Low SP: OR = 1.13; High SP vs. Low SP: OR = 1.27). For these three predictors all had slightly higher odds ratios for distinguishing between high social participation versus low social participation compared to moderate social participation versus low social participation. There was not a clear trend as to whether personal or environmental factors were the strongest facilitators to social participation. Personal factors (e.g., life happiness, self-rated health status, satisfaction with life) tended to be the weakest predictors while environmental factors (e.g., use of accessibility features in the home, assistance with ADLs) were the stronger predictors to social participation.

There was not a clear trend as to whether personal or environmental factors were the strongest predictors to social participation. Subjective personal factors (life happiness, self-rated health status, and satisfaction with life) were the weakest predictors of social participation. Personal sociodemographic variables (family status, mother tongue, sex and employment status) were the strongest predictors to social participation. Stress and lack of aids were also strong personal factors. Environmental factors related to assistance with ADLs (number of assisted ADLs, need additional assistance with ADLs, and need for assistance with ADLs) and accessibility features in the home (use and need of these features) were also strong predictors of social participation.

5.6 Caveats, Limitation and Strengths

The results of this study need to be interpreted in light of its limitations. The design used in PALS was cross-sectional. Therefore this study can only provide associations, not causation. The population parameters of Canadians with disabilities are unknown; this study relied on a national survey (PALS), which is the best estimate of this population. In using a nationwide survey this study did have a large sample size (n = 6105) of people with mobility disabilities but the sample was only somewhat representative of the Canadian population. The sample was slightly older; likely due to the fact that mobility disability is associated with increased age. PALS did not ask questions about culture and mother tongue (language) was operationalized narrowly as English, French, or Other. The sample was not representative of the Canadian population in respect to mother tongue. English (75.7%) was the mother tongue of the majority of people in this study, as compared to 57.8% in the Canadian population in 2006 (Statistics Canada, 2006a). There may have been a sample bias in the survey, as those individuals who did not speak English or French as their mother tongue may not have responded to the survey. This is an important caveat to acknowledge, as language may be a barrier in and of itself to social participation and was a significant predictor of social participation in this study. The sample was also significantly lower in averages for employment status (i.e., high rate of unemployment and retirement) and education levels completed (e.g., lower percentage of completing high school) compared to the Canadian population (Statistics Canada, 2006a).

Many of the PALS survey items were biased towards those individuals with more severe disabilities. For example, the PALS asked about use and lack of aids, implying that the questioning was directed towards participants who had more severe limitations (higher degree of mobility disability). The items focused on the use and lack of accessibility features in the homes were also biased toward severe mobility disabilities. For example "needing a lowered counter" assumed that participants were using a wheelchair; whereas higher counters might be more accessible for people who stand but have mobility, agility or pain disabilities.

Additionally, survey items may not have been as comprehensive as one would like in terms of the most important or influential barriers and facilitators to social participation. For example, leisure barriers included on the survey may not have been real or perceived barriers; this can be considered because "other" was frequently reported in this category. Social support was measured in quantity not quality. The number of living family members and friends is not a fair representation of the quality or amount of social support (physical and emotional) that one may receive. Also the list of social participation activities was not very extensive (visiting museums, libraries and parks, attending sporting or cultural events, exercising, walking or playing sports, visiting family or friends, reading, talking on the telephone with family/friends, and watching/listening to TV, videos, radio and CDs). Although it was a diverse list (physically active and passive activities, inside and outside the home, and social or solitary) it is questionable if watching/listening TV, radio, and CD really can be categorized as social participation. This is difficult to determine, as there are no set lists of activities that are deemed universal for social participation; social participation is subjectively and conceptually

studied (Hammel et al., 2008). Participants reported having participated more in home activities (i.e., watching/listening TV, radio, and CD everyday) than outdoor. This result could be due to the limited list of activities or due to the severity of disability of the sample as all the in home activities can be completed with minimal movement (i.e., mobility).

Strengths of this study include the use a large national population based survey, providing greater external validity. This descriptive study focuses on mobility disabilities, whereas a lot of research is specific to certain physical disabilities. It is unique not only in that it examined mobility disabilities, but examined this population in relation to social participation with an age group that focused on young and middle-aged adults (20-64). The majority of the limited literature within social participation and mobility/physical disabilities focuses on adults 65 and older and lacks large sample sizes. This study is grounded in the ICF model, which is an internationally recognized and studied model put forth by the WHO (2001).

5.7 Recommendations for Future Research

There are several recommendations that can be made for further research in the area of mobility disabilities and social participation. Firstly more research is needed on the use and lack of aids for mobility disabilities. This study showed that not many individuals used mobility aids (27%) and the list of aids provided was mainly for very severe disabilities as opposed to aids for moderate or mild disability. Qualitative and observational research should be done to determine the most useful aids for maintaining independence among people with mobility disabilities and thus increasing social

participation. A more valid and comprehensive list of aids could then be used in future survey research. Similarly, accessibility features in home were not highly used or perceived as needed among the sample in this study. These findings may not be a result of real lack of use or need but rather due to the list of accessibility features provided on the PALS. Many of the features included on the survey were very expensive (e.g., automatic doors) and some features were more likely to be used among individuals with more severe disabilities (e.g., elevators and ramps). A more diverse and comprehensive list of accessibility features may be more valid. For example, among this sample "Other" accessibility features were frequently reported. Further research should aim to investigate what these "other" accessibility features are. These findings may help with increasing independence among individuals who have difficulty with mobility within and entering/leaving the home and among those who receive a high amount of assistance with ADLs.

Barriers preventing leisure activity and disability as barriers to activity were explored in this study. Participants were asked whether they experienced eight barriers preventing leisure activity. "Other" was one of the most frequently chosen options. Thus, research is needed to determine what leisure barriers this population actually perceives or experiences. Participants were asked to rate the frequency and severity in which three disabilities (mobility, agility, and pain) made it difficult to join or participate in activities. On average, the sample reported a low to moderate degree of barriers to activity participation due to disability. However, within barriers preventing leisure activity, individuals in this study reported their condition as the most frequent leisure barrier. Thus, individuals reported disability as a strong barrier to leisure while also

reporting that their disability did not strongly affect their activity participation. Other factors must be influencing disability barrier to activity as these results are slightly contradicting. Future research should focus on exploring what aspects of the disability (e.g., physical limitations, influence on social life, increased time needed for personal care and housework, social stigma, etc.) are causing the barriers to social participation. Additionally, despite condition being reported as a high barrier, barriers preventing leisure activity and disability as barriers to activity were not strong predictors of social participation. This may suggest that individuals are reporting their disability as a barrier to activity, when in fact it is not strongly effecting their social participation. Further research is needed to explore the real and perceived influences of disability as barriers to social participation.

This study only focused on the quantity of social support for individuals. Additionally the quality of assistance with ADLs was not explored in this study. It is recommended that further research be done to explore the informal or formal support that individuals really need. Qualitative studies should look at investigating the quality of the support provided by family members and close friends (informal support) as well as through formal support (e.g., community and health care services). Research does exist on the quality of social support and assistance with everyday activities; however, research is needed in relation to mobility disabilities and social participation.

5.8 Recommendations to Practitioners

The following are recommendations made to health care practitioners, government agencies, and organizations for the reduction of mobility disabilities and for the increased

involvement in social participation. The results of this study indicate that respondents' main cause of disability condition were accidents and injuries (27.8%), work conditions, (10.0%), and other causes (21.6%). Efforts should be made to reduce or prevent accidents and injuries, which often result in mobility disabilities. Research should be done to identify what type of accidents (motor vehicle, workplace, etc.) are the main causes of mobility disabilities in order to target prevention strategies. Further workplace and public safety education should be implemented in these efforts to reduce injuries.

Rehabilitative health care practitioners (physiotherapy, chiropractic, etc.) should be advocating further on the therapeutic benefits of these modalities for mobility disabilities. In this study there was a high utilization of the health care system. Individuals with mobility disabilities had a high percentage of medication use (82.4%) and among this sample 40% visited a physician at least once a month. However, rehabilitative care utilization was not as high (physiotherapy 27%, chiropractic 15%, and massage therapy 17%); this could be due to the fact that these services might not be covered by public health care or that individuals with mobility disabilities are unaware of the importance of these services. Investigations should look into ways that these services can be maximized for their use on individuals with mobility disabilities.

There is a need for more formal and informal support services for individuals with mobility disabilities to assist them with ADLs. In this study there were certain types of activities that individuals received the most help with: housework, heavy chores, and going to appointments and shopping. These same activities were also the most under-assisted and unassisted. Respondents who already received assistance with ADLs indicated that they required further assistance with heavy chores, going to appointments

and shopping, and housework. Similarly, individuals who did not receive any assistance at all indicated that they needed aid with heavy chores and housework. Individuals may not have available informal, unpaid social support to assist them with these activities. Such support is often not available due to factors such as increased mobility of individuals (i.e., family and friends often live far distances from each other) and lack of social capital (e.g., due to reduced sense of community and urbanization). Promotion and education of community aid/assistance should be further explored. Local organizations and not-for-profit organizations may be able to contribute or ease the burden of some ADLs for individuals who have mobility disabilities. Educating the public on the importance of community and social connections can be vital to the younger adults for the maintenance of independent living as they age. Further government support for these individuals to get formal assistance with ADLs could provide more independent living.

Covering the cost of aids and assistive devices would be a beneficial factor in the maintenance of independence as one ages with a mobility disability. Respondents in this study indicated that the main reason aids were lacking was due to cost: approximately 70% of the subsample who stated a need for aids indicated that the main reasons for not having and using aids was that they were too expensive and were not covered by insurance. If more aids were covered by public health care and/or private insurance it could likely reduce other health care costs (e.g., home care services, long-term care). It would also further reduce disabilities (co-morbidities) and likely help prevent falls associated with mobility disabilities. Recommendations should be taken under consideration for promoting or furthering educating the public and/or those who seek medical attention for mobility disabilities about self-management strategies such as the

use of aids. In this study individuals indicated that they did not know where or how to get some of the aids they needed. Providing insight into where to find certain aids, how aids can benefit mobility disabilities, and why certain aids should be used as preventative measures would increase independence among this population. Workshops for individuals with mobility disabilities could demonstrate the use of aid alternatives as some aids are either difficult to obtain or too expensive for some individuals. For example, rather than purchasing an expensive grasping tool one could use long kitchen tongs or an inexpensive hot water bottle can be used in place of an expensive electric moist-heating pad. Similarly, it is recommended that leisure education programs be implemented to assist individuals with mobility disabilities on reducing or negotiating barriers to social and leisure activities. For example, a leisure education program should inform individuals of low or no cost social participation activities. In this study 17% individuals reported the expensive of activity as a barrier to leisure. Educating individuals on low or no cost activities could reduce the number of individuals who do not participate due to cost or lack of knowledge of what activities are available to them.

5.9 Conclusion

In conclusion this topic is important because mobility disabilities are chronic and their prevalence will only continue to increase in the ageing population. This study addressed important gaps in mobility disability research by studying young and middle-aged adults with mobility disabilities in a large population based sample. Further studies are needed in the area of all mobility disabilities among the young and middle-aged adult population to confirm the importance of targeting this age group with prevention,

education and self-management strategies in order to reduce the impact and severity of mobility disabilities across the life span. In targeting prevention strategies at a younger age, health care costs can be kept from increasing drastically as the population grows and ages by promoting and maintaining independence. This was one of the first studies to investigate multiple personal and environmental barriers and facilitators to social participation. This study demonstrates that more comprehensive factors need to be addressed in identifying barriers that affect individuals with mobility disabilities from participating in valued life activities. Further research in the area of aids, assisted devices, accessibility features and other self-management and formal strategies and services is needed to determine how individuals with mobility disabilities can reduce and negotiate barriers to activity and social participation. The results of this study suggest a complex interaction between personal and environmental factors that constrain and promote social participation; it provides the foundation for further empirical research to increase activity participation and mobility. Promoting and increasing social participation can increase the well-being and independence of individuals with mobility disabilities. The area of mobility disability calls for interdisciplinary research and service and policy development to identify, develop and enhance resources and services that are needed to promote more independent living and QOL for individuals with mobility disabilities.

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